

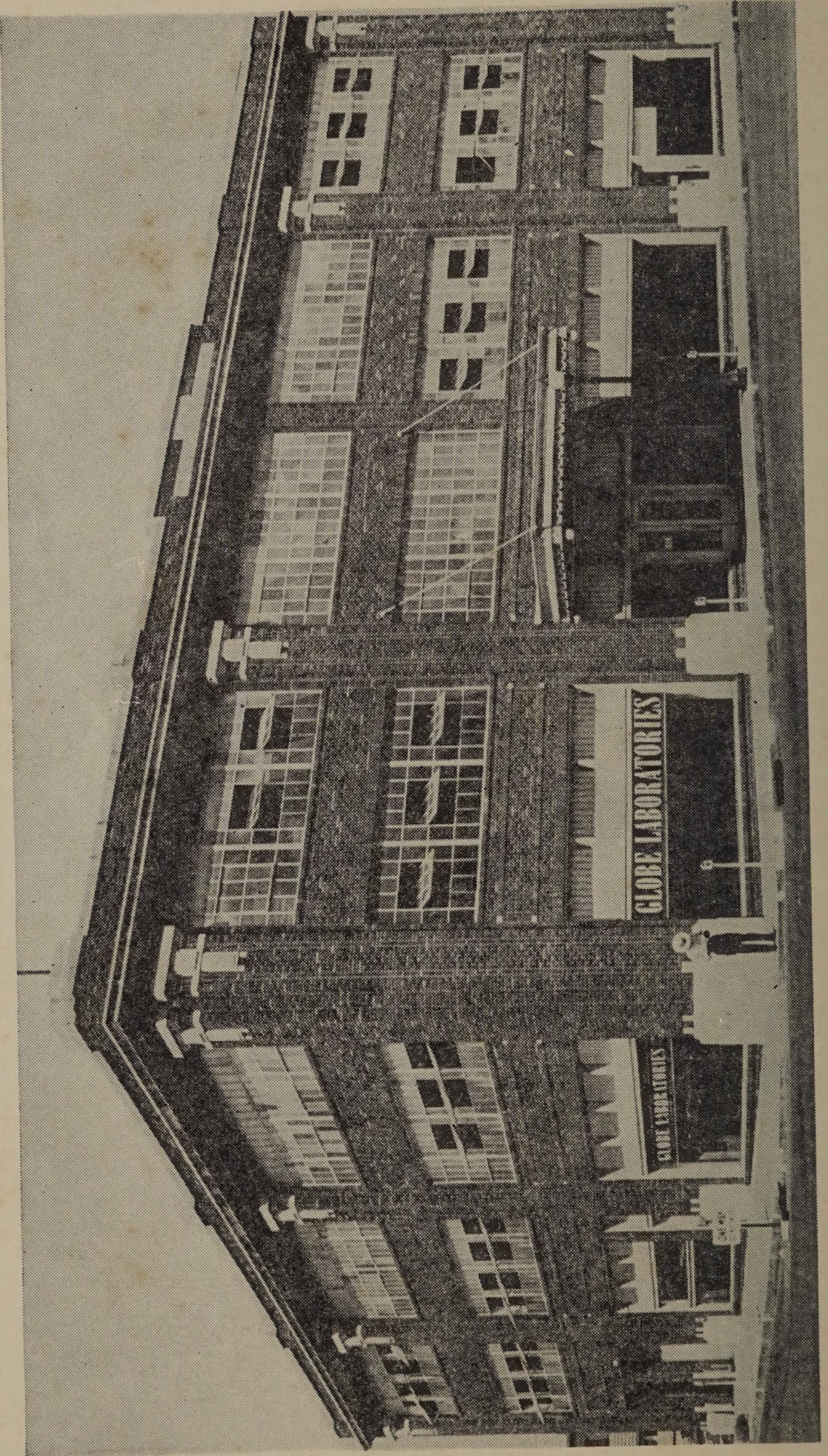
JIM MATTHEWS

The
GLOBE
Blue Book

1950 EDITION

3.00

The
GLOBE
Blue Book



GENERAL OFFICES OF GLOBE LABORATORIES, 116 COMMERCE ST., FORT WORTH, TEXAS

FOREWORD

GUIDEBOOK TO ANIMAL-POULTRY HEALTH

THERE is nothing that will pay livestock and poultry raisers greater dividends than the application of scientifically correct procedures for safeguarding the health of their animals and birds. In the past decade science has moved with rapid and far-reaching strides into those fields of research and study which go to the very center of the cause and effect of diseases and conditions commonly affecting livestock and poultry. Knowledge thus gained from years of painstaking effort and unrelenting quest has resulted in the development of specific Veterinary Biologicals and Pharmaceuticals for better animal and poultry health.

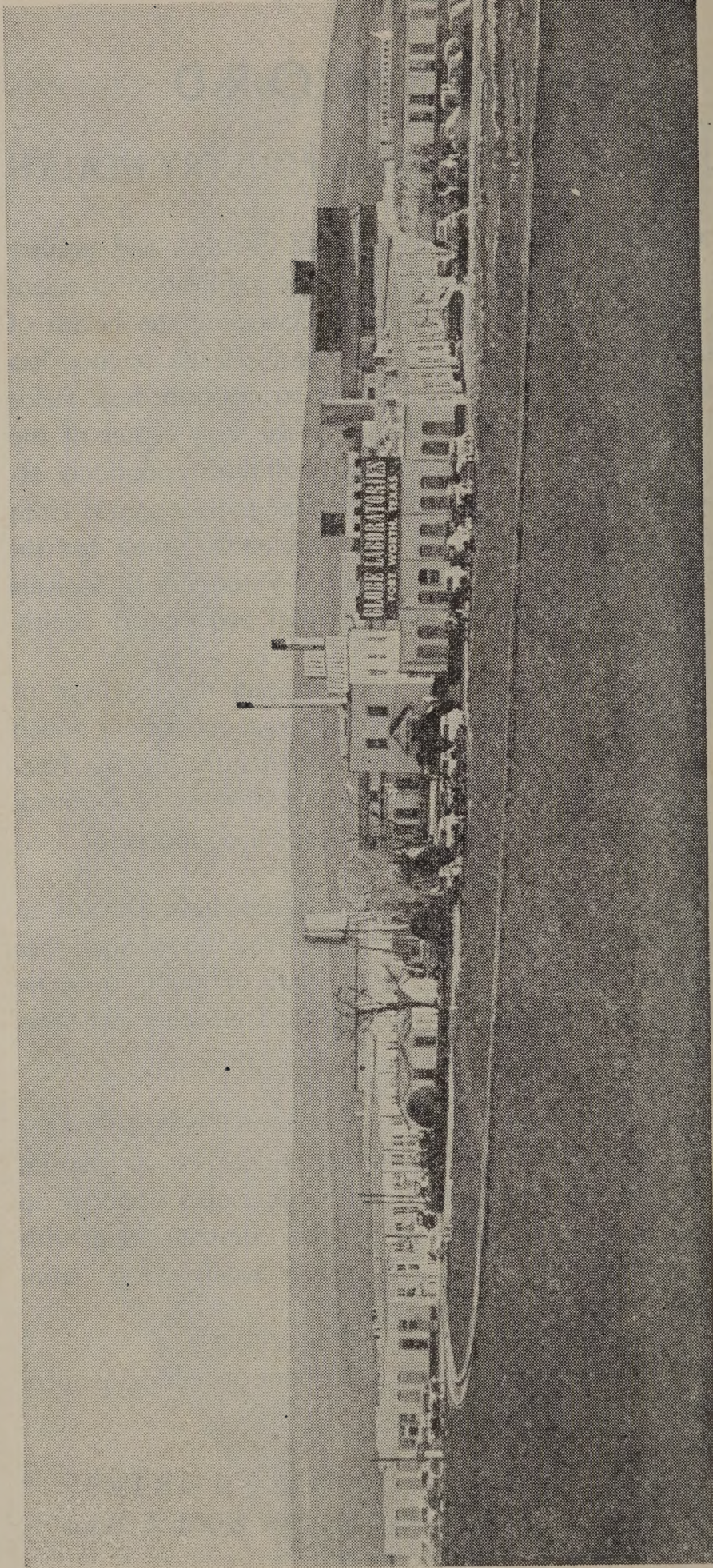
The Globe Laboratories' staff has had the privilege of contributing to the advance of this great movement which has meant not only the relief of animal suffering, but freedom from the heavy toll exacted by diseases of livestock and poultry, from which our fathers had no escape.

Leading stockmen and poultry raisers have learned to depend upon "Globe"—safe within the knowledge that any product bearing this famous mark of quality may be relied upon for scientific accuracy and absolute dependability.

In the final analysis, performance counts. It is the height of economy to seek not that which is cheapest, as pennies are counted, but that which can be depended upon to do all that is claimed for it at a price commensurate with benefits derived. You will never receive less from "Globe."

We here present our latest guidebook to animal-poultry health.

GLOBE LABORATORIES
116 Commerce St., Fort Worth 2, Texas



GLOBE LABORATORIES, FORT WORTH, TEXAS

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INTRODUCTORY SECTION

DEFINITIONS

ALTERATIVE: An agent which acts in a way to correct disturbed metabolic processes and promote tissue repair.

ANEMIA: A condition in which the blood is reduced in amount or is deficient in red blood cells or in hemoglobin.

ANTACID: An agent which reduces or neutralizes the acidity of the gastric juice or other secretion.

ANTHELMINTIC: An agent used to kill or expel intestinal worms.

ANTIBODIES OR IMMUNE BODIES: Substances produced by the animal body in response to the introduction into the tissues of antigenic substances such as bacterins, vaccines, toxins, toxoids, or bacteria in suitable quantities. In most instances the action of antibodies is to aid in the destruction of invading bacteria or to neutralize toxins produced by them—in other words, to make the animal resistant or immune to these disease producing agents. There are a few exceptions to this rule. For example, the antibodies that occur in the blood of chickens affected with Pullorum Disease do not confer any substantial degree of immunity.

ANTIGEN: In the widest sense, any substance which, when introduced into the tissues of a living animal, is capable of stimulating the production of antibodies and which, when brought in contact with this antibody under suitable conditions, will react with it in some observable way. These two fundamental properties of an antigen have practical application in the prevention and diagnosis of disease.

ANTISEPTIC: A substance which inhibits the growth and development of germs (bacteria), and aids in the arrest of fermentation and decomposition.

ASPHYXIA: Suffocation. Also the suspension of vital functions due to a deficiency of oxygen in the blood.

ASTRINGENT: An agent which causes contraction of the tissues, arrest of the secretion, or the control of bleeding.

BACTERIA: Bacteria are the smallest and simplest known forms of plant life. They are single cell organisms, and occur as cocci, bacilli, and spirilla.

PATHOGENIC BACTERIA: Germs which

have the power to produce disease. They are so small they can be seen only with the aid of a high-powered microscope. At the present time, there are many immunological agents (Bacterins, Vaccines, Antitoxins, Toxoids, and Immune Serums) available for the prevention, control, and treatment of bacterial diseases in livestock and poultry.

BACTERINS: Suspensions of killed bacteria for use in vaccinating to prevent disease. In the manufacture of bacterins, the organisms must first be grown in large quantities in special culture media.

WASHED CULTURE BACTERINS: In the case of Washed Culture Bacterins, the organisms are grown on the surface of a solid agar medium and then washed off and suspended in sterile physiological saline.

WHOLE CULTURE BACTERINS are prepared by growing the organisms in a special liquid medium which also serves as the suspending agent, thus valuable immunizing substances such as soluble products of bacterial growth and endotoxins released by autolysis are retained in the finished product. The organisms may be killed either by the addition of bactericidal chemicals or by moderate heat. The chemical method is generally preferred because it does not impair the immunizing value of the product, and in some instances, definitely increases it.

CATHARTIC: An agent causing active movement of the bowels.

DEMULCENT: An agent which soothes and relieves irritation, especially of the mucous membrane surfaces.

DIARRHEA: An abnormally frequent discharge of more or less watery fecal matter from the bowels.

DISINFECTANT: An agent which has the power to kill bacteria or to inhibit their activity.

DEODORANT: An agent which destroys or counteracts foul odors.

EMOLLIENT: An agent which softens the skin and soothes irritation of the skin and mucous membrane.

IMMUNITY: Resistance to infectious disease.

INSECTICIDE: An agent which kills insects.
LAXATIVE: A mild cathartic moving the bowels slightly without pain or violent action.
STIMULANT: An agent which produces a temporary increase of vital activity.
CIRCULATORY STIMULANT—An agent which stimulates the blood circulating system.
GASTRIC STIMULANT—An agent which stimulates the stomach and flow of stomach juices.
RESPIRATORY STIMULANT—A stimulant to the breathing system.

TONIC: An agent which restores enfeebled functions of digestion and promotes the appetite.

TOXINS: Poisonous substances of animal, plant or bacterial origin. There are two types or classes of **BACTERIAL TOXINS**. **EXO-TOXINS** or true toxins are soluble poisonous substances secreted by certain bacteria during active growth in suitable culture media or in the tissues of an infected animal. The disease-producing power of these particular bacteria is due almost entirely to the toxins which they

produce. **ENDOTOXINS** are poisonous substances which occur within the cell bodies of certain bacteria and exert their toxic action only after being released from the cell by autolysis.

VACCINATION: The injection of some agent (bacterin, vaccine, serum, etc.) into the tissues of an animal for the purpose of preventing or treating disease.

VACCINES: Suspensions of virus-containing tissues or living attenuated (weakened) bacteria employed to produce immunity.

VERMICIDE: An agent which kills parasitic worms in the stomach or intestines.

VERMIFUGE: An agent which causes the expulsion of worms from the gastro-intestinal tract.

VIRUSES: Disease-producing agents, generally believed to be living organisms which are too small to be visible under the microscope and which are capable of passing through the pores of special filters which retain ordinary bacteria.

IMMUNOLOGICAL PRODUCTS

What They Are and How They Work

"Immunity" means, in general terms, a resistance to infectious disease. Textbooks on the subject mention several types or classes of immunity, two of which are especially important from the standpoint of disease control in domestic animals and poultry. An understanding of these two types of immunity is essential if one is to obtain maximum benefits from the use of biological products.

The injection of a Bacterin, Vaccine or Toxoid into an animal stimulates the animal's tissue cells to produce substances called antibodies which serve to protect the animal against infection by the particular organisms represented in the product. Since the cells of the treated animal are active in producing the antibodies, we speak of this as an *Active Immunity*. Active immunity develops gradually, requiring from one to four weeks to reach its maximum. This type of immunity lasts a relatively long time, although there is considerable variation, depending on the age and species of the animal, nature of the disease, quality of product used and other factors. For example, pigs actively immunized with Hog-Cholera Virus and Anti-Hog-Cholera Serum will, under ordinary conditions, remain re-

sistant to Hog Cholera for life. On the other hand, dogs vaccinated with Rabies Vaccine gradually lose their immunity after about twelve months, which makes it necessary to revaccinate at least once each year.

The antibodies, which are present in the blood serum of an immunized animal, may be transferred to other animals by injections of this serum. Animals so treated acquire an immunity by virtue of the antibodies injected. This type of immunity is called *Passive Immunity* since the tissue cells of the treated animal are not involved in the production of the antibodies. Passive immunity is of short duration, lasting, on the average, about three to four weeks. Its effect, however, is immediate, and for this reason immune serums or antisera are of great value in the treatment of affected animals and also in providing immediate protection to animals that have been or are likely to be exposed to disease soon.

There are many factors which affect the degree and duration of active immunity. It is generally recognized that very young animals do not immunize as readily as older animals. Nutritional deficiencies and other debilitating conditions may possibly interfere with the de-

velopment of immunity, or even cause a decrease in the resistance of an animal that has been successfully immunized some time previously. In any large number of animals, one may occasionally encounter the rare individual

which, for some unknown reason, is unable to develop an immunity, even when vaccinated with products that are highly effective in the vast majority of cases. Immunity is, therefore, a relative thing, dependent on many variable factors, including the individual.

BACTERINS

Bacterins are suspensions of bacteria which have been killed by heat or chemical means, thereby rendering them incapable of producing disease. The bacteria are first isolated from the blood or tissues of animals sick or dead of the disease. Their identity is established by exacting biological tests, and suitable culture media inoculated and incubated at blood temperature.

The culture medium is prepared with tissue juices and other ingredients to simulate the body conditions, and serves as the food for

bacterial development. The bacteria, by this means, can be grown in large numbers, pure and free of all contamination.

After maximum growth has been reached, the cultures are removed from the incubator and a preservative added. The preservative acts also as the killing agent. Each culture is tested for sterility to determine definitely that all the organisms have been killed. Each batch of bacterin is subjected to microscopic examinations and animal inoculation tests to determine purity and safety of the product.

VACCINES

Vaccines constitute a group of biological products which, like bacterins, are employed for the purpose of producing an active immunity. They differ in many respects from bacterins and their composition is determined largely by the methods employed in growing the bacteria or viruses which comprise the active or immunizing agent in the product.

Bacterial Vaccines are suspensions of living bacteria which have been attenuated or weakened to such a degree that they are no longer capable of producing disease when injected into the animal body. Brucella Abortus Vaccine is a typical example of a bacterial vaccine.

Virus Vaccines are suspensions of ground tissues in which the virus has grown. Viruses will not grow and multiply in artificial culture media and consequently must be grown in or on the tissues of living animals. These tissues

are collected at the proper time, ground, and processed in various ways to make the finished product. Certain vaccines, as for example Fowl Pox Vaccine, contain live virus since it is essential in this instance that the virus be alive in order to produce immunity. In Rabies and Encephalomyelitis Vaccines, however, the virus is killed by chemical agents. These viruses are capable of producing an immunity even though they are killed and, further, they could not be used safely if alive.

Hog-Cholera Virus, strictly speaking, is not a vaccine, and its virulence has not been interfered with. Its action is controlled in the body of the hog by the injection of Immune Serum which prevents the development of Hog Cholera. It is the virus which stimulates the development of an active, lasting immunity.

IMMUNE SERUMS

Practically all Immune Serums are prepared from animals which have previously been immunized by injecting into their bodies large and repeated doses of Bacterins. When sufficient immunity has been developed by this treatment, the animals are injected with large

and repeated doses of living bacteria, the disease-producing powers of which have not been impaired in any way.

The blood of the animals is repeatedly tested, and when found to contain sufficient amounts of antibodies, the blood is collected,

clarified, pasteurized, and preserved by the addition of a suitable preserving agent.

Immune Serums contain the antibodies specific for the disease germs used in immunizing the animal, and when injected into well animals in sufficient dosage, provide an immediate immunity against the specific disease.

The Immune Serum, when injected into an animal's body, does not stimulate that animal's body cells to produce antibodies. Therefore, the immunity conferred is transitory, lasting for relatively short periods of time.

Immune Serums are used to treat sick ani-

mals and to protect animals that have been or are likely to be exposed to infection. When injected into such animals in sufficient dosage, the antibodies immediately protect the tissues from further bacterial invasion.

The dosage generally recommended has been arrived at largely through experience. It has been found that large doses, in severe cases repeated in 4 to 8 hours (less severe cases, 12 to 24 hours), are much more effective than small doses repeated at more frequent intervals. Judgment as to the dosage to be employed in any given case would depend on the severity of the symptoms manifested, and the size of the animal.

CARE OF IMMUNOLOGICAL PRODUCTS

Bacterins, Vaccines, and Immune Serums are all adversely affected by exposure to heat and light. For this reason, they should always be stored under refrigeration, preferably at 35 to 45° F., but should not be frozen. All Globe biological products are marketed in sealed pasteboard boxes in order to protect

the product from light. Live Viruses and Bacterial Vaccines are much more sensitive to the effects of heat than are Bacterins and Immune Serums; therefore, particular care should be taken to keep such products cold until ready for use.

SANITATION

This term, while familiar to everyone, has been more or less misunderstood, abused and misused until the public generally has lost sight of its real meaning, value, and importance.

Sanitation means to render wholesome or healthful, and requires the use of methods which have proved to be effective in the prevention of disease and the promotion of health.

The term, cleanliness, means the removal of all filth and dirt, freedom from whatever is foul and offensive (rubbish, animal body discharges, etc.).

Therefore, the first essential of sanitation is cleanliness. Second, disinfection.

Sanitation should be maintained at all times.

Disinfection means destroying disease-producing bacteria in and about the premises, and making conditions unfavorable for their development. Disinfection is accomplished by the use of dips, disinfectants, etc.

The effectiveness of dips and disinfectants is dependent upon cleanliness. Before disin-

fecting, it is necessary first to clean thoroughly and remove all dirt, rubbish, etc., in order to be sure that the disinfecting agent will come in direct contact with and destroy any disease bacteria which may be present.

Thorough cleaning and disinfection do not, in themselves, constitute sanitation. It is of equal importance to clean and disinfect the premises at periodic intervals to maintain sanitation.

Sanitation plays a most important part in the prevention of diseases by reducing the number of disease bacteria on the premises with which animals will come in contact.

It is especially important that strict sanitary measures be employed on premises where infectious contagious diseases are present. Sanitation plays an important part in preventing the spread of any infectious disease. It should be remembered that the number of disease bacteria taken within an animal's body determines whether or not the animal will contract the disease and, if so, whether or not the disease will be mild or severe.

Through cleanliness and disinfection, the number of disease bacteria is greatly decreased, and healthy animals are less apt to take within

their bodies a sufficient number of the bacteria to produce disease.

DISINFECTING AGENTS

Effective disinfection depends on four things: First, the phenol coefficient of the disinfectant. Second, the dilution at which the disinfectant is used. Third, proper cleaning before application. And fourth, thoroughness of application.

The phenol coefficient indicates the killing strength of a disinfectant as compared to phenol (carbolic acid).

Disinfectants are diluted with water for use, and the extent of dilution will depend largely on the phenol coefficient. As a general rule, disinfectants should be diluted not more than 20 times the phenol coefficient. For example, a disinfectant with phenol coefficient 5 may be diluted 100 times (20 x 5); that is, one part disinfectant to 99 parts water. In many instances stronger solutions are preferred. Obviously a disinfectant of high phenol coefficient will go farther than one of low coefficient. It is seldom economical to use disinfectants of less than coefficient 5.

Cleaning before disinfection is essential if the disinfectant is to do an effective job. Excessive amounts of dirt, filth, and organic matter interfere with the action of disinfectants.

Thorough application means applying the disinfectant to all contaminated surfaces and objects, with special attention to corners, cracks, crevices, and other points that might easily be overlooked.

The use of coal tar disinfectants, such as Globe Dip, for general farm disinfection and many other purposes is well known. In certain operations, such as dairying, coal tar disinfectants are unsuitable because of their pronounced coal tar odor.

Globe Odorless Disinfectant and Globe Poultry Disinfectant, containing quaternary ammonium compounds, are among the most recent developments in the sanitation field. These products have a high phenol coefficient, are odorless, tasteless, non-toxic, non-irritating, and non-corrosive. They are especially suited to all dairy and poultry sanitation needs. In suitable concentrations, they are effective deodorants as well as disinfectants. Globe Poultry Disinfectant, in proper strength, will kill the virus of Newcastle disease in contaminated brooder houses, batteries, and other equipment, and in addition, may be used as a sanitizing agent in the drinking water.

APPROXIMATE MEASURES

1/2 ounce (fluid)	4 teaspoonfuls (tsp.)
1/2 ounce (fluid)	1 tablespoonful
4 ounces (fluid)	1 teacupful
8 ounces (fluid)	1 glassful
1 c.c.	16 drops
4 c.c.	1 teaspoonful
15 c.c.	1 tablespoonful

IMPORTANCE OF MINERALS AND VITAMINS

Minerals and vitamins are essential for the proper growth, maintenance and functioning of the body. Deficiencies of these constituents in the diet result in abnormalities which are referred to as nutritional diseases.

Minerals are the major elements in the makeup of the bony skeleton and small quan-

ties are also necessary in the formation of the body tissues and fluids.

A deficiency of calcium or phosphorus in the diet causes soft, malformed bones (rickets) in growing animals, and is a common cause of "stunting." In grown animals, a deficiency

of these minerals causes the bones to become enlarged, spongy and brittle.

Animals suffering from mineral deficiencies have a depraved appetite and eat dirt, sand, sticks, chew on bones, etc., in an effort to obtain the minerals that are lacking in the diet. Stiff joints, lack of appetite and an unthrifty condition are other symptoms of a mineral deficiency.

Iron and copper deficiencies produce a nutritional anemia which is most commonly found in suckling animals because milk is low in these minerals.

Small amounts of other minerals are also essential to animals, but as a general rule, sufficient quantities are present in the regular feeds.

Growing animals, high producers and pregnant animals are most often affected with nutritional deficiencies because their need is greater. In many localities throughout the United States, a deficiency of certain minerals in the soil is known to exist. Forage such as hay, pasture grasses, etc., grown in these localities are deficient in the same minerals.

Salt also is essential for animals. Cattle require more than other domestic animals. Cows should always have access to a salt lick even though salt is regularly mixed in the feed.

It is essential in mineral deficient areas that other minerals be given regularly in addition to salt, if the livestock enterprise is to be profitable.

Vitamins A and D are the two most often lacking in the diet of livestock. The other vitamins are generally present in sufficient

quantities in the regular diet to meet the daily requirements of the various animals.

Vitamin A is necessary for proper growth and production, and to keep the tissues healthy. A deficiency of this vitamin predisposes animals to respiratory and eye diseases. The nerves are also affected, resulting in a staggering gait and paralysis. Calves are sometimes born blind if their mothers have been on a Vitamin A deficient diet during the gestation period.

Vitamin D is essential for the proper assimilation of calcium and phosphorus; a deficiency of this vitamin produces the same symptoms as an actual deficiency of these minerals.

Green pasture grasses and properly cured hays contain sufficient quantities of Vitamin A and the precursor of Vitamin D.

Exposure of hays to sunlight while curing transforms the precursor of Vitamin D to the actual vitamin.

Vitamin E has been designated as the anti-sterility vitamin. It plays an active part in the normal processes of reproduction. A deficiency of this vitamin causes slow breeders, impotency and sometimes abortion. This vitamin is found principally in the cereal grains.

There is a wide range between the normal daily requirements of the various vitamins and minimum intake at which symptoms of disease are observed.

Despite this fact, nutritional diseases appear rather frequently and at times the addition of vitamin concentrates to the diet is recommended.

MODE OF ADMINISTRATION OF DRUGS

Various methods of administering drugs, listed according to their rapidity of absorption: **INTRAVENOUS:** Injection directly into the veins. This method is generally used when rapid and effective action is needed to save life.

INTRAMUSCULAR: Injection is through the skin and subcutaneous tissue, directly into the muscle. Absorption is very rapid in this case.

SUBCUTANEOUS: Injection into the tissue beneath the skin.

ORAL: By the mouth—drugs are usually given by the mouth and are absorbed in the stomach and intestines. Absorption is more rapid when drugs are given in solution into

an empty stomach; slower when administered in powder, pill or ball form, and on a full stomach.

INHALATION: (Inhale). Volatile drugs are used mainly for their local action on the respiratory tract.

RECTAL: By the rectum. This method is used when oral administration is inadvisable or impossible, because of paralysis of the throat, etc. Absorption here is slower.

TOPICAL: Local application to external surfaces of the body: Absorption by this method is extremely slow and the effects of the drug are limited to the treated area.

USE AND CARE OF SYRINGES

All syringes and needles should be thoroughly cleaned and sterilized by boiling for at least 15 minutes just before using. Syringes and needles that have been cleaned thoroughly may be sterilized by immersing in a suitable disinfectant solution for 30 minutes.

To adjust syringe, push plunger all the way in and turn palm rest or handle to the right. If too tight, turn to the left. Place dosage nut or set screw on plunger stem in accordance with dose to be administered.

SITE OF INJECTION

The best place to inject most bacterins, vaccines, etc., in horses and cattle is in the side of the neck, midway between the head and shoulders; sheep and swine, under the foreleg (armpit). See Center Spread.

Needles after each injection should be rinsed in a disinfectant solution but care should be exercised to insure that the disinfectant solution is expelled from the lumen of the needle before use.

METHOD OF FILLING SYRINGE

Shake bottle well before drawing the contents of the bottle into the syringe. Force a needle through the diaphragm of the rubber stopper. Draw the product into the syringe direct from the bottle.

Attach another sterile needle to the syringe to inject the product.

Biological products should be used the same day the stopper is punctured. When vaccinating, protect this class of products from direct sunlight and intense heat to avoid impairment of immunizing properties.

After using syringes, they should be taken apart, thoroughly cleaned and dried, and placed in a dark cool place until again needed.

CATTLE SECTION

ACETONEMIA

Acetonemia is not an infectious disease, but rather a metabolic disturbance. While the fundamental cause is not known, the immediate cause seems to be a blood sugar deficiency. High producing cows of all ages are affected, the disease being found more often in animals that have passed through two or three lactation periods.

Acetonemia may occur as a complicating factor in Milk Fever cases or may occur as an independent disease from one week to eight months following calving. The majority of cases are observed in the late summer when the grass is dry or in the winter when the cattle are on dry, poor quality feed.

SYMPTOMS

In typical cases of Acetonemia, animals appear depressed, there is a sudden reduction in the milk flow, constipation and a rapid loss of weight.

PREVENTION

Pregnant animals should be supplied with sufficient carbohydrates daily in the form of high-quality hay, good pasture grass, or by the addition of molasses to the feeds.

TREATMENT

The majority of cases of Acetonemia respond favorably to the subcutaneous injection of 250 to 500 c.c. of Sterile Glucose Solution, repeated in 24 hours if needed. Add liberal quantities of corn sugar or molasses to the ration. Should a relapse occur in three or four weeks, the same treatment should be repeated.

REMARKS

When Acetonemia occurs soon after calving, it is likely to be complicated with Milk Fever (see page 39). The administration of Cal-O-Dex in these cases is recommended as the calcium in the preparation is effective in treating Milk Fever.

A dosage of 250 to 500 c.c. Cal-O-Dex should be given intravenously or intramuscularly. In the latter case, divide the dosage, injecting not more than 50 c.c. in each location to prevent sloughing of the tissue. This dosage may be repeated in 24 hours if needed.

GLOBE STERILE GLUCOSE SOLUTION

CODE WORD:

250-c.c. BottleGLUM

100-c.c. BottleGLUBIG

GLOBE CAL-O-DEX, See Page 40

ACTINOMYCOSIS and ACTINOBACILLOSIS

(Lumpy Jaw, Big Jaw, or Wooden Tongue)

CAUSE

Actinomycosis is caused by *Actinomyces bovis* (the ray fungus), and Actinobacillosis is caused by *Actinobacillus lignieresii*. Both organisms produce the characteristic tumor-like swellings or enlargements of the tissues of the head and throat in cattle. Actinomycosis is usually confined to the bone tissues of the head and may affect the internal organs and tissues of the body and the skin. The causative micro-organisms may be harbored in the mouth, but as a rule the infection is introduced by eating feeds, particularly the bearded grains and roughage, that are contaminated with the causative agents.

SYMPTOMS

Small swellings on the side of the face, at the angle of the jaw, are noticed; these become progressively larger, attaining a size of three to four inches in diameter or larger. When the tongue is affected it becomes sore and swollen, making eating and drinking difficult. The swellings contain a creamy, yellowish-white pus. The general condition of the affected animals usually remains good unless the lesions are so located as to interfere with eating, or the disease becomes generalized.

TREATMENT

When the bone tissues are involved, treatment is not always very satisfactory. When the soft tissues are involved, and before bone involvement and generalization takes place, the Sodium Iodide treatment or the Potassium Iodide treatment is usually highly effective. The dosage suggested for Sodium Iodide is 500 c.c. for an animal weighing 1,000 pounds. Increase or decrease dosage proportionately according to weight of animal. The dosage should be administered into the jugular vein,



using an intravenous set. In many cases, one treatment is all that is necessary. The Potassium Iodide treatment is also effective in most cases. Three to four 30-grain Potassium Iodide Tablets daily in the feed for seven to ten days, or until iodism is produced, is suggested. When iodism appears (severe watering of the eyes, loss of appetite, roughened coat), discontinue treatment for seven days. Then repeat treatment using the same dosage if the animal's condition warrants.

Two or three such treatments are usually sufficient, although a few cases may fail to respond. When superficial abscesses are present, they should be opened, drained, and swabbed with Tincture of Iodine.

REMARKS

When extensive bone lesions are present, it is probably best not to attempt treatment, but rather fatten the animal for market as soon as possible. Cases in which the bone is extensively affected do not usually respond to treatment satisfactorily.

LOBE POTASSIUM IODIDE TABLETS
(30-Grain)

Caution: Use only as directed.

CODE WORD

Bottle of 100 Tablets.....PITAB

LOBE SODIUM IODIDE SOLUTION

Caution: Use only as directed.

CODE WORD

500-c.c. BottleSODISO

ANAPLASMOSIS

Anaplasmosis is an infectious disease of cattle caused by a protozoan blood parasite, *Anaplasma marginale*. The anaplasma organisms occur in the red blood cells, many of which are destroyed by the parasite, leading to a very severe anemia. The death rate from Anaplasmosis is very variable, but the majority of animals recover with good care and proper treatment. Recovered animals may continue to harbor the anaplasma organisms for an indefinite period of time even though these animals show no symptoms of the infection. Blood sucking insects, particularly horse flies, mosquitoes, and ticks, may spread the disease from sick or carrier animals to healthy cattle. Instruments, such as vaccinating needles, castrating knives, and dehorning equipment, may serve to spread the disease unless adequately disinfected between each animal.

SYMPTOMS

In extremely mild cases, there is little to be seen other than a rough coat, dullness, loss of appetite, loss of flesh, and constipation. In acute attacks, the temperature is 104° or above. The most outstanding symptom is a pale yellow

lowish discoloration of the visible mucous membranes, as for example the gums and inner surface of the eyelids. There is general weakness, fast breathing, and sometimes quivering of the muscles. Urination is frequent but only in occasional cases is the urine blood-tinged. If the disease becomes chronic, there may be a continuous fever for a week or more, poor appetite, and considerable loss in condition.

DIAGNOSIS

From a practical standpoint, diagnosis usually must be made on the basis of symptoms. Identification of the anaplasma organism by microscopic examination of the blood constitutes a conclusive diagnosis but this test is not always reliable and frequently laboratory facilities are not available.

TREATMENT

Globe Sodium Cacodylate Solution, injected intravenously or intramuscularly, is recommended to help counteract the marked debilitating effects of Anaplasmosis. This drug promotes regeneration of the red blood cells which are seriously depleted in attacks of this disease. The dose for cattle is 5-c.c. for each 100 pounds body weight, and this dose may be repeated if desired every two days until 3 doses have been given. Sodium Cacodylate is an organic arsenical preparation and continued or prolonged use should be avoided, otherwise serious injury might result. In cases of exhaustion and extreme debility, give also at least 100-c.c. of Sterile Glucose Solution, according to label directions.

In addition to medicinal treatment, good care and nursing are extremely important. The animal should be provided with quiet, comfortable quarters, shade, and protection from flies and other insects. Feed and water should be accessible at all times.

For best results, treatment must be administered early in the course of the disease.

GLOBE SODIUM CACODYLATE SOLUTION

CODE WORD:

100-c.c. BottleCAC
250-c.c. BottleCACODY

GLOBE STERILE GLUCOSE SOLUTION

See Page 16

ANTHRAX (Charbon)

Anthrax is caused by a bacterium, *Bacillus anthracis*. The germs are taken into the body through the mouth with contaminated feed or water. They may also gain entrance to the body through wounds, abrasions, biting insects, etc.

Anthrax affects cattle, horses and sheep;

swine and dogs are rarely affected. Man also is susceptible to this disease and may contract it through contact with affected animals.

SYMPTOMS

Several animals in a herd may be found dead, or die a few hours after they are first observed to be sick. In the less acute form there is depression, spasm, staggering, loss of appetite, cessation of milk flow in dairy cows, and a bloody diarrhea may develop. After death of the animal, there is rapid decomposition, bloody discharge from the body openings and usually swelling in the neck region.

POST-MORTEM LESIONS

In suspected cases of Anthrax, it is best that the carcass not be opened since the blood and body fluids are heavily laden with Anthrax germs which would contaminate the surrounding area. If for any reason it appears necessary or desirable to perform an autopsy, rubber gloves should be worn, since man is susceptible to Anthrax. In animals dead of Anthrax, the blood fails to clot, the spleen is enlarged and pulpy, and numerous hemorrhages are present throughout the body tissues.

DIAGNOSIS

For laboratory diagnosis, a sample of blood from a sick animal or an ear from one that has just died should be packed in a tight metal container with lid soldered on to prevent leakage. This container should be packed in ice and shipped to the nearest laboratory.

PREVENTION

Anthrax is most prevalent in the late summer and early fall, and all animals in known infected territories should be vaccinated early and before the disease makes its appearance. The Anthrax organism can remain alive and virulent in the soil for many years. For this reason, it is impossible to control the disease by the usual sanitary control measures. Vaccination is the only satisfactory method of protecting animals against this disease.

Under average field conditions, a reasonable degree of protection is established in animals vaccinated with Globe Anthrax Bacterin (Washed Culture) in seven to ten days after vaccination. The lasting qualities of such protection vary in individuals, due to the degree of susceptibility and the virulence of the infection to which they may be exposed. It can reasonably be expected that in most cases, under average field conditions, the protection produced will last for a period of four to five months. In territories where the disease is

known to exist in a highly virulent form, it is always advisable and strongly recommended that all animals be re-vaccinated in two and one-half or three months.

TREATMENT

If Anti-Anthrax Serum is available, give 100 c.c. to 250 c.c. daily until the temperature is normal. This may be supplemented with large doses (2000 units per pound body weight) of Penicillin every 4 hours. Since the acute form of the disease is rapidly fatal, treatment is not always successful.

REMARKS

The carcasses of animals that die of Anthrax should be burned or buried deeply and the ground contaminated with body discharges disinfected.

GLOBE ANTHRAX BACTERIN

For the prevention of Anthrax in Cattle, Horses, Sheep, Goats, and Swine. Safe to use because it is a sterile product, containing no living Anthrax organisms thus cannot cause vaccination outbreaks:

CODE WORD:

250-c.c. PackageANFIV
50-c.c. PackageANBAC

PENICILLIN

See Page 37

BLACKLEG

Blackleg is caused by a bacterium, *Clostridium chauvei*, which affects principally cattle and occasionally sheep. The disease is spread by contact with affected animals, contaminated pastures, feed, water, etc. Calves of any age and older animals up to three years of age are highly susceptible. Aged cattle do have Blackleg, but rarely.

SYMPTOMS

Blackleg is a peracute disease, death usually occurring within a few hours after the first symptoms are observed. There is usually a loss of appetite, lameness or stiffness in one or more limbs. Perhaps the most characteristic and familiar symptom of Blackleg is the appearance of a swelling under the skin which cracks like paper when pressed with the hand. Bloody discharges may be noticed from the rectum, mouth or nostrils. In severely acute cases, no symptoms whatever may be noticed before death.

PREVENTION

One 5 c.c. dose of Blackleg Bacterin Whole Culture (Alum Treated), administered to a calf of any age, will, under average field conditions, usually produce a protective degree of resistance against Blackleg, lasting generally for life in calves. In non-vaccinated herds where losses from Blackleg have occurred, Blackleg Bacterin (Whole Culture) should be used as this product is believed to establish a high degree of protection in a shorter time than the Alum Treated product. When Blackleg Bacterin (Whole Culture) is used to immunize calves under three months of age, they should be re-vaccinated when they reach the age of three months with either the Whole Culture or Alum Treated Bacterin.

TREATMENT

Due to the rapid course of this disease, treatment is not practical.

REMARKS

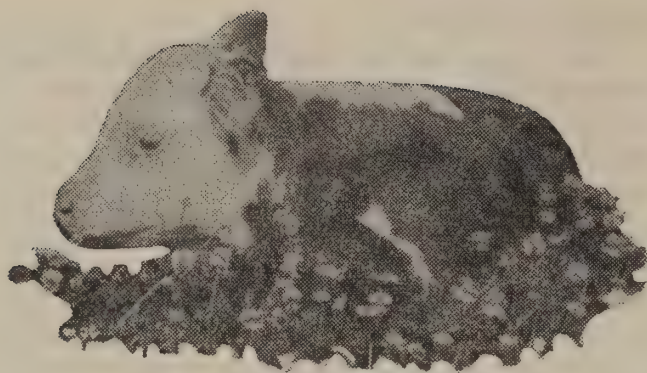
The organism causing Blackleg is very resistant and may remain alive on infected soil indefinitely. Where the disease has appeared on the premises, it becomes necessary to vaccinate all new calves every year. The carcasses of animals dead from Blackleg should be burned or buried and hay spread over the ground and burned to kill as many of the Blackleg organisms as possible that may have escaped from the body openings. Blackleg and Malignant Edema resemble each other in many respects and sometimes the two diseases occur together. (See Malignant Edema page 35).

GLOBE BLACKLEG BACTERIN WHOLE CULTURE (ALUM TREATED)

Protection for livestock is vital—it's up to you to protect your calves from Blackleg by use of the adequate measures available to you. Do your part! Use dependable Globe Blackleg Bacterin Whole Culture (Alum Treated) to help preserve your part of the calf crop from the deadly disease, Blackleg. Globe Blackleg Bacterin—the "sterling quality bacterin in the silver box"—has proved its ability to provide practical protection. One 5 c.c. dose, injected into calves of any age, meets the recommendations for lasting protection against Blackleg infection.

CODE WORD:

50-Dose PackageGENFUL
25-Dose PackageGENSO
10-Dose PackageGENTEN
5-Dose PackageGEN



GLOBE BLACKLEG BACTERIN (WHOLE CULTURE)

In cases where Blackleg infection is present in the herd, it is always advisable to use Blackleg Bacterin (Whole Culture) because the immunity established by this product is faster, thereby probably saving many animals which would otherwise be lost by using a product slower to immunize.

Dose: 5-c.c. for animals of any age.

CODE WORD:

50-Dose Package	CULBAC
25-Dose Package	CULT
10-Dose Package	WHOBAC
5-Dose Package	WEECUL

BRUCELLOSIS

(Infectious Abortion—Bang's Disease)

Brucellosis in cattle is caused by *Brucella abortus*, which acts principally on the genital tract of pregnant cows, resulting in abortion, retained afterbirth, sterility, etc. It is an infectious disease which has reached quite serious proportions, especially in dairy cattle.

SPREAD

1. Infected cows are the chief spreaders. Discharges from the vagina following abortions or calving are highly infectious for a period of 6 to 8 weeks.

Milk from such cows has been shown to be infected with the organisms in some cases. If so, it is possible for the feces of the nursing calf to be infectious and a mechanical spread of the disease takes place.

2. Infected bulls may spread the disease. Reactor bulls are few and their part is minor, but if their reproductive organs are infected, they could inoculate any cow they breed with the disease.

The non-infected bull can mechanically transmit brucellosis by breeding a discharging reactor and then a clean cow. Normal good animal husbandry under which controlled

breeding, wherein the cow is not submitted to the bull for three months following calving or abortion, would automatically eliminate this danger.

SYMPTOMS

Some infected cows never show any signs of having the disease but can act as spreaders. This fact, coupled with the resistance developed after the loss of 1 to 3 calves, may lead the owner into a sense of false security concerning certain cows.

"First calf" heifers are most susceptible to Brucellosis. However, all ages may be affected. The act of aborting after the fifth month of pregnancy is the most readily observed symptom of this disease. However, weak, full-term calves, and slow or faulty breeders are not uncommon. Retention of the afterbirth is of frequent occurrence in Brucellosis but is not a diagnostic sign, inasmuch as it is often seen as a distinct disease entity in the absence of Brucellosis. When the afterbirth is retained it putrifies rapidly and the poisonous toxins formed are absorbed by the animal, resulting in a toxemia, loss of appetite, fever, and may terminate in the death of the animal.

DIAGNOSIS

The only certain means of diagnosis is by blood test. Since the testing program is under the direction of the U. S. Bureau of Animal Industry, working in conjunction with the Livestock Sanitary Authorities in the various States, these organizations or your local veterinarian should be consulted if the herd is to be tested.

CONTROL

The most effective control measures are:

1. Vaccination of all calves at 4 to 8 months of age with *Brucella Abortus Vaccine*. Most calves are immune to the disease until they reach sexual maturity. Therefore, this age range has been found to be the most ideal for this vaccination. Calves vaccinated between the ages of 4 and 8 months of age develop a substantial immunity, lasting in most instances for 2 years or longer. Even in animals that later acquire the disease, the abortion rate is lowered. Animals vaccinated as calves become temporary reactors to the blood test. This condition will usually subside within one year and the animal will then show a negative blood test. This may be of importance to the

owner if some future control program entails blood testing.

2. Vaccination of adult cattle with Brucella Abortus Vaccine. Animals vaccinated as adults become reactors for an indefinite period and can not be distinguished from infected animals by the blood test. A positive blood test may be a bar to the interstate movement of some classes of cattle. Furthermore, laws and regulations in many localities prohibit the sale of raw milk from reactor cattle. These limitations should be given serious consideration before adopting a program of adult vaccination. Vaccination of adult cattle with Brucella Abortus Vaccine is recommended especially in herds where other control methods are inapplicable or have proven ineffective.

3. Detection of all affected animals by blood tests.

The blood test is not infallible but is a guide to determine a course to take. Percentage of reactors in any herd should be known before a program is decided upon. Other causes of abortion may be responsible for your suspicion.

One negative test on any given cow is not sufficient to eliminate all possibility of her being infected. A period of 6 months may pass between the time she "gets" the infection and the time she shows a positive test.

4. Isolation of all pregnant animals before calving. This is particularly important in crowded dairies. Clean cows are most susceptible to the disease in the last stages of pregnancy. Infected cows are most dangerous as spreaders following calving.

5. Hand breeding or short time pasture breeding to insure a long time interval between calving and breeding.

TREATMENT

THERE IS NO RECOGNIZED TREATMENT OF VALUE FOR ANIMALS AFFECTED WITH BRUCELLOSIS. For treatment of retained afterbirth and its sequelae, see section on Metritis (page 38).

CAUTION: Brucella Abortus Vaccine should not be used to vaccinate cattle which are more than four months in pregnancy because of the danger of causing abortion.

Globe Brucella Abortus Vaccine is supplied only in one-dose vials containing 6 c.c. Sterilize all syringes and needles before use by

boiling and use a sterile needle for each animal. Do not use antiseptics of any kind to sterilize syringes or needles or to disinfect site of inoculation. Antiseptics may impair or destroy the effectiveness of the product.

GLOBE BRUCELLA ABORTUS VACCINE

(Bovine Abortion Vaccine)

CODE WORD:

Package of Ten 1-Dose Vials...ABORTEN

1-Dose PackageABORTUS

(No Return Privileges)

CALF DIPHTHERIA

(Necrotic laryngitis—Necrotic stomatitis)

All calves showing heavy breathing with apparent effort of pulling air through the throat region should be suspected of having this disease. Caseous necrosis, ulceration, and toxemia due to the presence of Actinomyces necrophorus infection in lesions in the mouth or throat complete the picture.

SYMPTOMS

1. Infected larynx—

Sudden sickness, high temperature (105°F.), distressed breathing, refusal of food, and in the last stages complete blockage of the throat resulting in death due to strangulation.

2. Infected mouth—

Depression, emaciation, salivation, sucking of the tongue, swallowing movements, and usually a high temperature. Small ulcers will be found in the mouth particularly on the tongue and upper gums.

TREATMENT

1. Globe Sulfa-Solution should be administered immediately. A dosage of 25 c.c. per 100 pounds should be given intraperitoneally every 12 hours for a period of 4 to 5 days. If treatment is started early, this should be sufficient.

2. Globe penicillin in large doses, repeated 3 to 4 times daily, should be administered in addition to the Sulfa-Solution in most cases. This will hasten recovery and insure a higher percentage of "saved animals."

3. All affected animals should be segregated, all visible lesions should be cleaned and treated with a suitable disinfectant such as Globe Odorless Disinfectant.

PREVENTION

Clean and disinfect all water and feed containers. Lots, lanes and sheds should be scraped of all bedding and debris. Earthen tanks, sump holes, stagnant pools, or any other source of water besides controlled clear tanks should be drained or fenced.

A daily check of all the animals should be made for any possible new cases and treatment begun immediately.

Stickers or grass burs sometimes are the initial cause of the trouble. If present in the pasture, a pasture change would be indicated.

GLOBE SULFA-SOLUTION

CODE WORD:

250-c.c. BottleSULFASOL

GLOBE PENICILLIN

See Page 37

GLOBE ODORLESS DISINFECTANT

See Page 38

CALF SCOURS

(White Scours—Infectious Diarrhea)

Scours in calves may be due to a variety of causes, but the type commonly referred to as White Scours is the most frequent and the most serious, particularly in dairy calves. White Scours is usually an infection caused by the ordinary colon bacillus which is present in the digestive tract of man and animals, and is almost universally present to some degree in the environment of the calf. Infection seldom takes place in the absence of some predisposing cause, although occasionally calves may be infected at birth or become infected by way of the navel.

The principal predisposing cause is indigestion resulting from overloading the stomach with milk or other food, or sometimes from the ingestion of foreign material such as straw, shavings, bedding, etc. Indigestion lowers the resistance of the digestive tract so that the colon bacillus, which is ordinarily harmless, finds it easy to invade the tissues and multiply. The infection may become complicated with a number of other bacteria (Salmonella enteritidis, Aerobacter aerogenes, and Pasteurella bovisseptica).

There is clinical evidence that Calf Scours is sometimes associated with a lack of certain

constituents in the feed, particularly Vitamin A and Niacin. Since new-born calves receive all of their nutritional requirements from the colostrum (first milk), it is necessary to assure an adequate supply of these vitamins in the feed of the cow. If the cow's ration contains an adequate supply of these vitamins, the calf, under ordinary conditions, should receive the necessary requirements. Calves that are deficient in Vitamin A and Nicotinic Acid lack normal resistance and develop a diarrhea due to the fact that the above mentioned bacteria find it more easy to gain entrance into the body and thus more readily produce the disease.

SYMPTOMS

Symptoms usually appear in calves at birth or during the first week of life. In acute outbreaks of the disease, older calves may become infected. The appetite is usually diminished in affected calves, severe abdominal pains develop, and a yellowish or grayish white fluid diarrhea is present which has a characteristic offensive odor. Marked weakness develops and in prolonged cases, inflammation of the joints.

PREVENTION

Sanitation and good management are of the utmost importance in the prevention of Calf Scours. Cows should be moved to a clean, disinfected stall or lot before calving. Wash the udder of the cow with a solution of Globe Odorless Disinfectant before allowing the calf to nurse, or hand feed the calf, using sterilized containers. Avoid overfeeding and prevent the calf from eating straw, litter, and other coarse material. The stump of the navel cord should be disinfected with Tincture of Iodine as soon as possible after birth, and two or three times daily for three or four days.

Antibacterial Serum (Bovine) (Bovine Origin) Formula 3 may be helpful in the treatment of infected calves; and in severe outbreaks, it may also be administered to non-affected calves in conjunction with bacterin in order to establish a quicker immunity.

To prevent scours in calves associated with a lack of Vitamin A or Niacin, give one Globe Calf Capsule a day, starting the day the calf is dropped. Continue giving one capsule every day for three or four weeks. This provides ample supplies of both vitamins.

TREATMENT

Because of variations in the cause and intensity of the disease, it is best to conduct treatment of affected animals along three main lines.

1. Give Globe Calf Scour Remedy with a dose syringe or bottle, using $\frac{1}{2}$ ounce for each 25 pounds body weight. Repeat this dosage 3 times a day for 3 or 4 days.

2. Inject subcutaneously 50 to 100 c.c. Antibacterial Serum (Bovine) Formula 3 and repeat at 24-hour intervals as needed.

3. Give Globe Calf Capsules, according to label directions, to insure an adequate daily intake of Vitamin A and Niacin.

GLOBE CALF SCOUR REMEDY

A liquid suspension containing Sulfathiazole, Colloidal Kaolin, Bismuth Subcarbonate, and Pectin.

Sulfathiazole is rapidly absorbed and therapeutic blood and tissue concentrations are readily obtainable. Because it is readily soluble, high bacteriostatic concentrations are reached locally in the intestinal fluids. It is, therefore, one of the most effective sulfonamides against organisms commonly associated with intestinal infections.

Globe Calf Scour Remedy combines the bacteriostatic action of Sulfathiazole with the adsorbent action of Kaolin, the astringent action of Bismuth and the detoxifying action of Pectin.

CODE WORD:

Pint BottleCAFREM

GLOBE ANTIBACTERIAL SERUM

(Bovine)

(Bovine Origin) Formula 3

CODE WORD:

250-c.c. PackageKAPHFUL

100-c.c. PackageKAPH

50-c.c. PackageKAPHIE

GLOBE ODORLESS DISINFECTANT

See Page 38

GLOBE SULPHOCARBOLATE

TABLETS

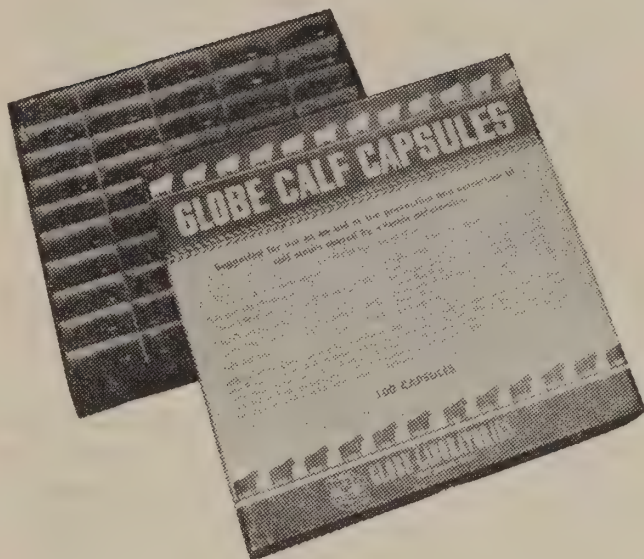
(Veterinary)

CODE WORD:

Bottle of 500 TabletsSULATE

Bottle of 100 TabletsSULFO

GLOBE CALF CAPSULES



CODE WORD:

Box of 100CAFHUN

Box of 24CAFCAP

DEHORNING

The removal of horns from cattle is a laborious task which can be avoided by applying Globe Dehorning Paste to the horn buttons of young calves. This paste contains a caustic which permanently destroys the horn producing tissue when properly used.

When necessary to dehorn older animals, it is important to stop the resulting hemorrhage and provide some form of protection for the open wound. Globe A-B-C Powder may be applied freely to assist in the control of bleeding. It may also be necessary to crush or twist the ends of the cut blood vessels with forceps, especially after removing large horns. After removal of the horn, dip a pledget of cotton in Globe Fly Repellent and Wound Dressing and insert it in the horn cavity. Then paint the entire cut surface with Globe Fly Repellent and Wound Dressing. The cotton will come out as the wound heals. Apply Globe Fly Repellent and Wound Dressing to the area as often as necessary to keep it protected until healing is complete.

GLOBE DEHORNING PASTE

CODE WORD:

Jar for 25 Calves.....DHORN

GLOBE A-B-C POWDER

Antiseptic-Blood-Clotting Powder

CODE WORD:

5-Pound Package	BLUDY
1-Pound Package	BLUDFUL
8-Ounce Package	BLUDMED
4-Ounce Package	BLUDSO

GLOBE FLY REPELLENT AND WOUND DRESSING, See Page 30

GLOBE FYRE-LES BRANDING FLUID

For use in branding livestock without hot irons.

CODE WORD:

Quart	FYRTO
Pint	FYRLB
8-Ounce	FYRE

(See "Branding Irons," for use in applying Branding Fluid, Page 103.)

GLOBE DIP

A standardized coal tar disinfectant and dip with a phenol coefficient of 5 by the F.D.A. Method. Widely used for dipping cattle and sheep for the control of lice and psoroptic and chorioptic mange. Active Ingredients: Coal Tar Oils, Soap.

CODE WORD:

1 Gallon	DIPGAL
Quart	DIPQT
Pint	DIPP
8 Ounces	DIPATE

GLOBE HORN PAINT

For use following dehorning. Active Ingredients: Non-Phenolic Coal Tar Oils, Pine Tar, Bone Oil.

CODE WORD:

1 Gallon	HOGAL
Quart	HOQUA
Pint	HOPAT

EXTERNAL PARASITES OF CATTLE

Cattle may be attacked by a large number of insect pests which are responsible for tremendous losses to livestock growers each year. The most serious of these parasites are the cattle grubs, horn flies, sucking and biting lice, mosquitoes, gnats, and screwworms.

CATTLE GRUBS

Cattle grubs, known also as warbles or wolves, constitute the larval stage in the life cycle of the heel fly. These parasites cause

serious losses to livestock owners in several ways. In fly season, the annoyance occasioned by the activity of the adult heel flies may lead to stampeding and serious injuries, impairment of appetite, loss of weight, and decrease in milk production.

Huge losses in leather are suffered every year due to the damage done to hides by the cattle grubs. To produce a No. 1 grade of hide, bringing the highest price (those containing not more than five cattle grub injuries), it is necessary to kill the grubs 2 or 3 months before animals are to be slaughtered, thus allowing time for most of the injuries to heal.

Killing the grubs in the backs of cattle will improve the quality of the hide and help to reduce the number of heel flies the following fly season.

Globe Grub Killer Powder contains rotenone, the only insecticidal agent known to be highly effective for killing cattle grubs.

TREATMENT

Apply Globe Grub Killer Powder with a shaker can or glass jar which has a close fitting lid with about 15 one-fourth inch holes punched outward through the lid. Apply powder to backs of infested cattle from shoulders to hips, using at least 3 ounces for each animal. In order to obtain satisfactory results from the treatment, it is essential that the powder be worked down through the hair and into the grub holes. This is best accomplished by a rotary motion of the finger tips and not with a straight motion of the flat hand or brush.

Treatment should be started before grubs begin to drop from the backs of infested cattle and should be repeated at 30-day intervals as long as necessary. Ordinarily three treatments are sufficient but in northern localities, additional treatments may be required.

HORN FLIES, LICE, MOSQUITOES AND GNATS

Horn Flies occur during the warm months everywhere cattle are raised. The adult flies spend practically all their time on the bodies of cattle where they produce considerable irritation. They are blood-suckers and cause serious annoyance and loss of blood as well as creating wounds which may become infested with screw worms. Literally thousands of horn flies may be seen at one time on a single ani-

mal in heavily infested areas. In some sections of the country, horn flies may be so abundant around feed lots that it is not economical to feed cattle during the Summer months in the absence of adequate fly control.

There are several species of lice which infest cattle, some of which suck blood while others known as biting lice feed on the scales of the skin. With the exception of the biting lice, they are generally not serious pests during the warm weather but during the Fall, Winter, and Spring when the coat is heavy, the lice multiply rapidly and may soon over-run the infested animal causing weakness, anemia, loss of weight, decreased milk production and general unthriftiness.

Mosquitoes and gnats in certain sections may be so numerous during warm weather that their vicious attacks on cattle seriously interfere with feeding and weight gains.

The control of these insect pests became markedly simplified with the advent of DDT. This remarkable insecticide proved effective against a larger number of insects than any other chemical compound previously discovered. It is relatively non-toxic when

properly used and its most advantageous characteristic is the fact that it remains active for long periods of time after application. It is not a repellent, that is, it does not drive away or repel insects, but exerts a killing effect on insects which have come in contact with it. DDT may be compounded for use on livestock in various ways but one of the most practical compositions is the DDT emulsion which can be used either as a dip or a spray and may be used in almost any type of spraying equipment without danger of clogging. The use of DDT emulsions on livestock is accompanied by no great hazard, provided they are used according to label directions. DDT emulsions are far less hazardous than the arsenical dips and nicotine dips which have been used by livestock growers for many years.

DDT is not at the present time recommended for use on dairy animals or in dairy barns because of the possibility of milk contamination.

Globe Glo-Cide 25 is a stable emulsion containing 25% DDT by weight. In this product, the emulsion is already completed and stabilized with the result that the product mixes very readily with water when diluted for use. Emulsifiable solutions of DDT on the other hand sometimes require considerable stirring and agitation, in order to get complete emulsification, when diluted with water. As indicated below, Glo-Cide 25 may be used for many purposes in addition to the control of horn flies, lice, mosquitoes, and gnats on cattle. In controlling lice on cattle, dipping or spraying with Glo-Cide 25, diluted as indicated, should be done in the fall before cold weather sets in. In cases where this is impractical and it becomes necessary to treat animals for lice during cold weather, Globe A-D-A Lice Powder, which contains rotenone and sulfur, may be applied as a dust.

In preparing dip or spray solutions with Glo-Cide 25, it is very important to measure accurately and stir emulsion thoroughly just before using. Do not mix Glo-Cide 25 with other dips.

How to dilute Glo-Cide 25 for use:

To make a two-tenths per cent DDT Emulsion add:

1 gallon Glo-Cide 25 to 125 gallons water, or

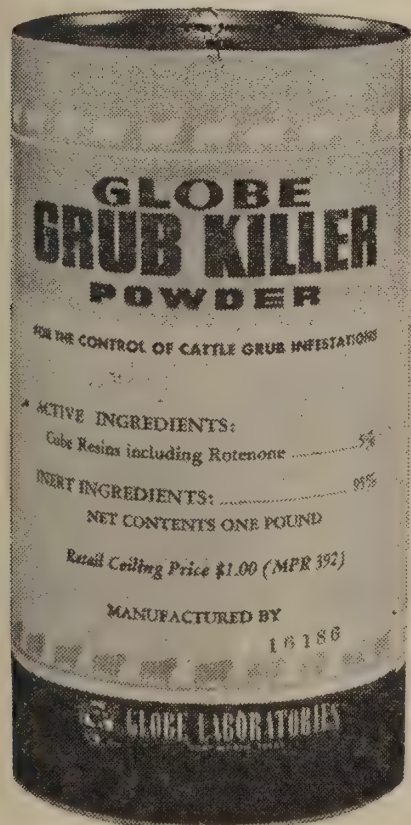
8 gallons Glo-Cide 25 to 1000 gallons water.

To make a three-tenths per cent DDT Emul-

GLOBE GRUB KILLER POWDER

CODE WORD:

1-Pound PackageGRUBBY



sion add:

1½ ounce Glo-Cide 25 to 1 gallon water, or

1 gallon Glo-Cide 25 to 82 gallons water, or

1¼ gallons Glo-Cide 25 to 100 gallons water.

To make a five-tenths per cent DDT Emulsion add:

1 gallon Glo-Cide 25 to 50 gallons water or

1 quart Glo-Cide 25 to 12½ gallons water.

To make a five per cent DDT Emulsion add:

1 part Glo-Cide 25 to 4 parts water.

DDT Emulsions in dipping vats may be used repeatedly. When necessary to replenish the dip, add 1 gallon Glo-Cide 25 for each 125 gallons of water added.

How to use Glo-Cide 25, after dilution with water:

HORN FLIES, MOSQUITOES, AND GNATS ON LIVESTOCK

Dip animals in a two-tenths per cent DDT Emulsion or spray with three-tenths per cent DDT Emulsion. Repeat after a two-week interval and once every three weeks thereafter throughout the insect season.

LICE ON CATTLE, HORSES AND HOGS

Dip animals in two-tenths per cent DDT Emulsion or spray with three-tenths per cent DDT Emulsion. Thoroughly wet the entire animal. Repeat in two weeks.

GOAT LICE



Dip animals in two-tenths per cent DDT Emulsion. Skin and hair must be thoroughly wet. Repeat in two weeks.

SHEEP TICKS (SHEEP KEDS)

Dip animals in two-tenths per cent DDT Emulsion. Skin and fleece must be thoroughly wet. A single dipping, if thorough, is sufficient.

HOUSE FLIES, STABLE FLIES, MOSQUITOES, ROACHES, FLEAS, BEDBUGS, AND DOG TICKS

Infesting barns, stables, sheds, poultry houses, dog kennels, and other farm buildings.

Use a five per cent DDT Emulsion. Apply as a relatively coarse spray to walls, floors, ceilings, doors, screens, and other surfaces where these insects are found, using one quart of five per cent DDT Emulsion for every 200 square feet of surface. For rough, porous surfaces, a larger quantity may be required. When the dried spray residue is not removed by washing, weathering, or other means, a single application may remain effective for 6 to 8 weeks, except in the case of roaches and ticks.

Since roaches and ticks are not easily killed, try to hit as many as possible when spraying. Spray heavily all cracks, crevices, and other hiding places. Repeated applications should be made whenever signs of re-infestation are seen.

Glo-Cide 25 is not recommended for household use where spotting of walls and wallpaper would be objectionable. For household use, get Glo-Cide 5, a strong oil-base spray.

GLOBE GLO-CIDE 25

(Contains DDT 25%)

CODE WORD:

GallonCITGAL
QuartCITART
PintCITPIT

GLOBE GLO-CIDE 5

(Contains DDT 5%)

A Residual Type Insect Spray. For use on Walls, Ceilings, Baseboards, Doors, Screens, and other surfaces in Homes, Barns, and other buildings where an insecticide effective over a long period of time is desired. Not for use on livestock.

CODE WORD:

GallonCIVGAL
QuartCIVIT
PintCIV

GLOBE GLO-DANE 45

Emulsifiable concentrate to be diluted with water. Contains 45% Chlordane—equivalent to 4 pounds of Chlordane in each gallon of concentrate.

Globe Glo-Dane 45 may be used effectively for control of many insect pests of livestock. Its outstanding advantages over DDT products are spectacular efficiency against hog mange, greater effectiveness against ticks and specific action on roaches. It has been suggested as a substitute for DDT in fly control in those areas where DDT resistant flies have developed. Like DDT, it is not recommended for use on dairy animals or in dairy barns. In addition, it has many applications for the control of crop and garden insects.

GLO-DANE 45 FOR LIVESTOCK PESTS

Hornflies on Cattle and Other Livestock—Spray animals thoroughly with 0.5% Chlordane Emulsion. Repeat in 3 to 4 weeks, and thereafter as necessary.

Lice on Cattle, Horses, Hogs and Goats—Spray animals with 0.25% Chlordane Emulsion. Wet animal thoroughly from tip of tail to hoof. Skin and hair of goats must be thoroughly wet. On cattle repeat the treatment in 10 days to 2 weeks for complete control.

Mange on Hogs and Dogs—Spray or dip thoroughly with 0.25% Chlordane Emulsion. Animals must be completely wetted. Large or heavy demodectic lesions should be scrubbed with a brush.

Ticks on Cattle and Horses—Spray thoroughly with 0.5% Chlordane Emulsion. For Spinose Ear Tick inject a small quantity of 0.5% emulsion into the ears with a syringe.

Sheep Ticks (Keds) and Lice—Spray thoroughly with 0.125% Chlordane Emulsion.

AGRICULTURAL USES FOR GLO-DANE 45

Dilution With Water—The strength of emulsion dilution is not too important, and will depend upon type of equipment used. The amount of actual Chlordane chemical applied per acre is important, and is controlled by the strength and number of gallons of diluted emulsion applied. The amount to apply depends upon the insect, the season, the weather and degree of infestation.

Grasshoppers, Crickets, Alfalfa Weevil,

Skin and fleece must be thoroughly wetted.

Ants, Roaches, Flies, Mosquitoes, Gnats, Fleas, Dog Ticks, Silverfish, and Waterbugs, Infesting Barns, Stables, Sheds, Poultry Houses, Dog Kennels and Other Farm Buildings—Use 2% Chlordane Emulsion. Thoroughly wet all areas where these insects alight or crawl, particularly infested cracks and hiding places. Repeat application as often as necessary to maintain an effective deposit of the residual toxicant. For fleas and ticks, thoroughly and repeatedly spray floors, baseboards, floor coverings, and wall cracks, as well as sleeping quarters of animals.

Ants, Chiggers, Ticks and Scorpions on Lawns—Spray lawn until wet with 0.25% or 0.5% Chlordane Emulsion. For a city lot 50 x 150 feet, use ½ to 1 pint Glo-Dane 45 in 12 or more gallons of water. For field work use 1 to 1½ quarts per acre in 40 or more gallons of water. Repeat as needed. Pour some of the diluted emulsion down entrance to ant hills, and spray heavily around them for 5 to 10 feet.

Dilutions

To Make a 0.125% Chlordane Emulsion—Add 2 tablespoonfuls Glo-Dane 45 to 3 gallons of water; or 1 pint to 48 gallons; or 1 quart to 96 gallons.

For 0.25% Chlordane Emulsion—Add 4 tablespoonfuls Glo-Dane 45 to 3 gallons of water; or 1 pint to 24 gallons; or 1 quart to 48 gallons.

For 0.5% Chlordane Emulsion—Add ½ pint Glo-Dane 45 to 6 gallons of water; or 1 pint to 12 gallons; or 1 quart to 24 gallons.

For 0.75% Chlordane Emulsion—Add ½ pint Glo-Dane 45 to 4 gallons of water; or 1 pint to 8 gallons; or 1 quart to 16 gallons.

For 2% Chlordane Emulsion—Add ½ pint Glo-Dane 45 to 1½ gallons of water; or 1 pint to 3 gallons; or 1 quart to 6 gallons.

Lygus Bug—For early spraying against young 'hoppers (first instars), treat all edges of fields, especially fence rows and ditches, using 1 quart Glo-Dane 45 Chlordane concentrate in 100* gallons of water per acre (2 quarts for a strip 33 feet wide by ½ mile long). Early "border spraying" is a big saving in both labor and material. Later in the season when the grasshoppers are flying, treat the entire field for complete control, using 1

quart per acre. Protects seed alfalfa, corn, cotton, orchards, clover, soybeans and truck crops from ants, alfalfa weevils, lygus bugs, and many other insects (as well as the grasshoppers) at the same time with one applica-

tion. Early treatment is important.
(*For ground sprayers. For airplane spraying, dilute with 1 to 2 gallons water per acre; with combination duster-sprayer dilute with 6 to 10 gallons water.)

CROP AND GARDEN INSECT CONTROL CHART

Showing Quarts Glo-Dane 45 (Actual Pounds Chlordane); Emulsion Strength (for Ground Sprayers); Gallons per Acre to be Applied; and Time for Application

<i>Insect</i>	<i>Crops</i>	<i>Quarts Glo-Dane 45 per Acre²</i>	<i>Emulsion Strength¹</i>	<i>Gallons Per Acre¹</i>	<i>Application</i>
Leaf Miners: Serpentine Beet, Pea Leaf Aster Leaf	Peas, Beans Tomatoes Potatoes, Beets Spinach, Etc.	¾ to 1¼	0.125 %	75 to 125	Make application as soon as miners appear. One application may be all that is required.
Carrot Rust Fly Carrot Weevil	Carrots	¾ to 1¼	0.125 %	75 to 125	Make first application when carrot rust flies first appear followed by 2 or 3 applications 10 days apart. Will control carrot weevil.
Onion Maggot Cabbage Maggot	Onions Cabbage Radishes Turnips Cauliflower	1 to 3	0.125 % or 0.25 %	100 to 150	Apply to soil or pour ½ cup at base of plant. On onions apply when plants are 1 inch out of ground and repeat once or twice at 10-day intervals. On cabbage, cauliflower, radishes and turnips apply as soon as plants are set in field and repeat 2 or 3 times at 10-day intervals.
Seed Corn Maggot	Beans, Onions Peas, Corn Etc.	1	0.125 %	100	Apply to soil surface at time of planting. Also may be used as seed coating to give 1 lb. actual Chlordane per acre according to rate of seeding.
Thrips	Onions, Beans Celery, Cabbage and other crops	1 to 1½	0.125 %	100 to 150	Make first application as soon as thrips appear. 2 or 3 subsequent applications at 10-day intervals.
Asparagus Beetle	Asparagus	1 to 1½	0.125 %	100 to 150	Cutting season; spray to cover field after morning cut. Growing season; spray as needed.
Hornworms: Tomato Tobacco	Tomatoes Tobacco	1 to 1½	0.125 %	100 to 150	Spray when hornworms appear. One application usually sufficient.
Imported Cabbageworm Cabbage Looper Diamond-back Moth	Cabbage Cauliflower Brussels Sprouts Broccoli	1	0.125 %	100	Make application as soon as insects appear. One to 4 applications at 10-day intervals needed depending on species present and reinfestation.
Corn Earworm	Sweet Corn, Seed Corn, Field Corn	1½	0.125 %	150	Apply when silks first appear and repeat 2 times at 2-day intervals.
Tarnished Plant Bug Flea Beetle Colorado Potato Beetle Blister Beetle	Various Crops	1½	0.125 %	150	Apply insecticide when insects first appear and repeat when necessary.
Harlequin Bug Stink Bug	Various Crops	1 to 1½	0.125 %	100 to 150	Apply insecticide when insects first appear and repeat when necessary.
Wireworms, White Grubs Green June Beetle Larvae White-fringed Beetle Mole Crickets, Collembola Japanese Beetle Larvae	Feed on root of many crops	2 to 5	0.25 % to 0.625 %	100	One application disked in not more than about three inches below the surface of the soil before seeding or transplanting.
Ants (attending aphids, scale and mealy bugs)	Seed destroy- ing and plant feeding species	1	0.125 %	100	Apply insecticide to surface of soil before planting or to soil and plants after crop is growing.

¹ Suggested amounts for small acreages.

² For large acreages dissolve in proper amount of water (depending upon kind of spraying equipment used) to deliver these quantities of Glo-Dane 45 to each acre.

CROP AND GARDEN INSECT CONTROL CHART—Continued

CAUTION: Do not apply to forage to be fed to dairy animals or to animals being finished for slaughter.
Do not apply to peas or beans after pods begin to form.
Do not apply to cabbage or similar cole crops after the heads begin to form.
Do not apply to cucurbits that may be susceptible to chlordane injury.
Do not apply to edible parts of food crops unless same are to be washed free of insecticide residue when harvested.

GLOBE GLO-DANE 45

CODE WORD:

Gallon GLODOR
Quart GLODAN
Pint GLODT

SCREW WORMS

The screw worm fly (*Cochliomyia americana*) is one of the most serious insect parasites of livestock in the South and Southwest. Although limited largely to the warm climate of the south portion of the United States, the screw worm may, under favorable weather conditions, migrate considerable distances into the more northern states during Summer weather. This fly breeds only in living tissue. The adult female lays her eggs at the edge of a wound. In less than a day, the eggs hatch and the small larvae or worms burrow into the tissues. Here they feed and grow for 4 to 7 days, at which time they drop to the ground, undergo further development, and finally emerge as adult flies to repeat the cycle. Since a single fly may lay from 50 to 300 eggs at one time, a wound can quickly become infested with tremendous numbers of screw worms which destroy large amounts of tissue and may cause death of the animal.

PREVENTION

The only effective means of preventing screw worm infestations is to dress all wounds promptly with a preparation which will adequately protect the raw surfaces and repel flies. This is especially important following such operations as castration, dehorning, and docking. Globe Fly Repellent and Wound Dressing is recommended as a protective covering for such wounds. It should be applied freely with care to see that the skin at the margin of the wounds, as well as the raw surface itself, is completely covered. Treatment should be repeated as often as necessary in order to keep the wound thoroughly covered until healing has been completed. Globe U. S. Formula No. 62, described below, is also highly effective in preventing screw worm infestations and has the added advantage of be-

ing effective in the treatment of wounds already infested.

TREATMENT

The old method of treating screw worm infested wounds and a method which is still in use to some extent is the application of a liquid screw worm killer (Globe Screw Worm Killer or Globe Blue Streak Screw Worm Killer), containing Benzol and Chloroform, to kill the screw worms present, followed by the application of Globe Fly Repellent and Wound Dressing to prevent reinfestation. The most recent and one of the most highly effective preparations for the treatment of screw worm infested wounds is U. S. Formula No. 62. Formula 62 was developed by the U. S. Bureau of Entomology after a very exhaustive study of the screw worm control problem. This product contains Benzol which kills screw worms on contact and Diphenylamine which is effective in preventing reinfestation as long as the wound is properly covered with the smear. Formula 62 should be applied with a swab or small paint brush, being sure that all parts of the wound, including pockets and outside margins, are thoroughly covered. It is not necessary to remove dead worms, but if they are removed, another application should be made before releasing the animal. Following treatment with Formula 62, many worms may fall from the wounds carrying some of the remedy with them. For this reason, treatment should be repeated as frequently as necessary in order to provide adequate protection.

GLOBE SCREW WORM KILLER (Red)

CODE WORD:

1 Gallon SWKGAL
Quart SWKQT
Pint SWKPT
8 Ounces SWKL
4 Ounces SWKS

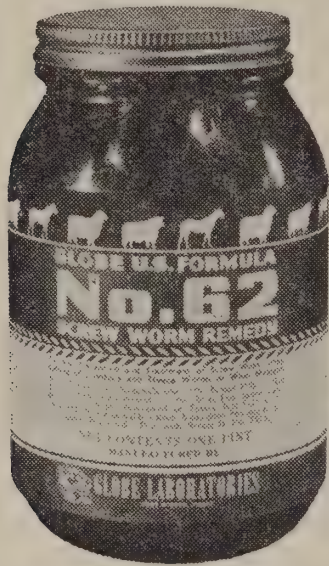
GLOBE U. S. STOCK 1029

For control of the "Spinose" or "Upland" Ear Tick.

CODE WORD:

Quart STOT

GLOBE U. S. FORMULA No. 62
Screw Worm Remedy



CODE WORD:

1 Gallon	SIXGAL
30 Fluid Ounces	SIXQT
14 Fluid Ounces	SIXPIT
7 Fluid Ounces	SIXT

**GLOBE FLY REPELLENT
AND WOUND DRESSING**

CODE WORD:

10 Pounds	FLYFUL
5 Pounds	FLYOFF
2½ Pounds	FLYSO
1¼ Pounds	FLYER
½ Pound	FLYLIT

**GLOBE BLUE STREAK
SCREW WORM KILLER**

CODE WORD:

1 Gallon	BSGAL
Quart	BSQ
Pint	BSP
8 Ounces	BSL
4 Ounces	BSS

FOOT ROT

(Fouls, necrotic pododermatitis)

This disease is caused by injury to the feet of cattle and subsequent infection. Bruises from stepping on each other or on rocks, etc., are the primary factors and Actinomyces necrophorus is usually the offending infectious organism. Muddy pastures, filthy barnyards, loose stones, and crowded conditions add to the troubles.

SYMPTOMS

The symptoms will vary from a slight lameness to a complete rotting of the hoof. All intermediate stages will be found. In most cases there is a marked swelling between the claws and just above the coronary band. The skin immediately above the foot may be greatly inflamed or discolored.

The animal will show great pain, refuse to put much weight on the affected foot, and in some instances refuse to stand.

If the disease is prolonged, rapid loss of body weight and other systemic symptoms will develop. In dairy cows there is a marked reduction of milk flow.

TREATMENT

Globe Sulfa-Solution is the ideal bacteriostatic agent to be used in treatment. This should be given either intravenously or intraperitoneally according to label recommendations.

Globe Sulfa-Solution provides the combined action of two sulfa drugs in combatting the infection. Also the toxicity factor has been greatly reduced in comparison with a single sulfonamide of equal dosage and benefit. If used in the early stages of the disease, no other treatment is necessary in the majority of the cases.

The animal should be promptly segregated from the herd. Preferably it should be placed in a clean dry pen with water and feed placed in an easily accessible place.

In the advanced stages, the foot should be cleaned, all necrotic tissue removed, and the foot disinfected with a solution of Globe Odorless Disinfectant (1 ounce per gallon of water).

PREVENTION

Drain or fence mud holes, clean lanes and barnyards, and relieve crowded conditions. If possible, the cattle should be placed in another pasture, and a program of pasture rotation inaugurated.

A foot bath located either in a lane or a chute will be very beneficial. This bath should be charged with Globe Copper-Iron Mixture. If the cattle are walked through this bath twice a day, the solution should not be stronger than one per cent (1%). If used weekly, the solution should be increased to five per cent (5%).

GLOBE SULFA-SOLUTION

See Page 22

GLOBE ODORLESS DISINFECTANT

See Page 38

GLOBE COPPER-IRON MIXTURE

See Page 74

HEMORRHAGIC SEPTICEMIA

This condition is often referred to as Shipping Fever or Stockyard Pneumonia in cattle, sheep, and goats; Swine Plague in swine; and Fowl Cholera in chickens and turkeys. Pasteurella organisms, associated with a lowered resistance of animals from shipment, weather changes, irregular feeding, or deficient diets may result in an attack of Hemorrhagic Septicemia. In addition to the Pasteurella organisms, Diphtheroid bacilli may be present, which complicate the disease.

SYMPTOMS

This disease is more prevalent in the spring, fall and winter months, causing considerable losses at times in livestock and poultry. The disease occurs in different forms and the symptoms vary, depending on the form. In the pulmonary form of the disease, the symptoms are: difficult breathing, dry painful cough, arched back and an increase in the normal body temperature. In the acute septicemic form, symptoms may appear suddenly. At first animals appear excited, later they stagger, collapse and die. Blood may escape from the nose shortly before or after death. There is an increased temperature, discharge from the eyes and occasionally the urine is bloody. In the edematous form of the disease, swellings may be observed on the neck, especially in the throat region. Hot, painful swellings on the legs, flanks and around the anal opening are not uncommon.

POST-MORTEM LESIONS

Bright red spots (petechial hemorrhages) are usually found on the heart, lungs, and serous membranes covering the intestines. In the pulmonary form, the lungs are affected with pneumonia; sometimes pus is present. In the intestinal form, the lining of the intestines is inflamed, dark red, bloody, and may contain dark red blotches.

PREVENTION

This disease can in many cases be prevented

by vaccination with either Hemorrhagic-Septicemia Bacterin or Corynebacterium-Pasteurella Bacterin (Whole Culture), using a 5-c.c. dose. The 1942 Yearbook of Agriculture ("Keeping Livestock Healthy") states: "The use of biological products to prevent hemorrhagic septicemia or to control outbreaks has been successful in many instances." Cattle to be shipped should be vaccinated with Bacterin two weeks prior to shipment. If this is impractical, 40 to 50 c.c. of Anti-Hemorrhagic-Septicemia Serum should be administered at the time of shipment, followed by vaccination with Bacterin upon arrival at the destination. During the cold wet season when Hemorrhagic Septicemia is frequently complicated with diphtheroid (Corynebacterium) infections, Corynebacterium-Pasteurella Bacterin is the product preferred for prevention.



TREATMENT

Sick animals should be isolated from the herd and given, in the case of cattle, a 100 c.c. to 500 c.c. dose of Anti-Hemorrhagic-Septicemia Serum, repeated in 24 hours, when necessary. In the case of swine and sheep, the dosage should be 40 to 50 c.c., repeated in 24 hours as needed.

In addition to serum treatment, Globe Sulfa-Solution may be administered intravenously or intraperitoneally, using a dose of 25 c.c. for each 100 pounds body weight. This dose should be repeated every 12 hours for 3 or 4 days.

Sulfanilamide has been used for many years in treating cases that are complicated with Streptococcus infection and in many instances has given good results. When desired, a single dose of Sulfa-Solution may be given for quick response followed by Sulfanilamide Tablets or Boluses by mouth or in the feed according to label directions. The two products should not be given simultaneously for this would result in excessive dosage of total Sulfa.

Healthy animals in affected herds may be given the preventive dose of serum, or they may be vaccinated with 10 c.c. of Hemorrhagic-Septicemia Bacterin or Corynebacterium-Pasteurella Bacterin. Repeat the bacterin dosage at 48-hour intervals as necessary.

For further information regarding the pulmonary or lung type of Hemorrhagic Septicemia see page 41, "Pneumonia."

GLOBE HEMORRHAGIC-SEPTICEMIA BACTERIN
(Whole Culture)

CODE WORD:

- 250-c.c. PackageHEMFUL
- 125-c.c. PackageHETWEN
- 50-c.c. PackageHETEN
- 25-c.c. PackageHEBAC

GLOBE CORYNEBACTERIUM-PASTEURELLA BACTERIN
(Whole Culture)

CODE WORD:

- 250-c.c. PackagePASBAK
- 125-c.c. PackagePASCUM
- 50-c.c. PackagePASDIP
- 25-c.c. PackagePASTER

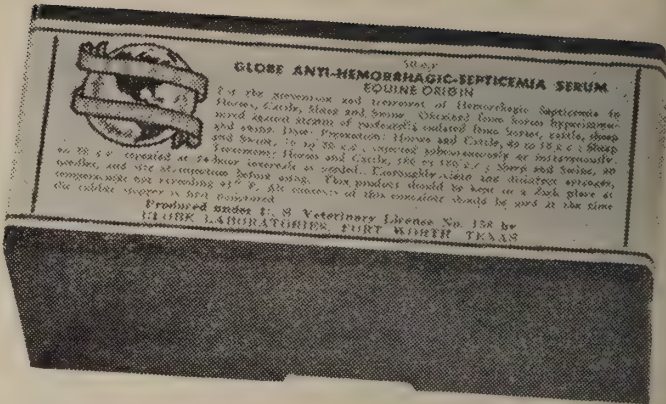
GLOBE SULFA-SOLUTION

For use in the treatment of Pneumonia (Shipping Fever) and Foot Rot in cattle, Calf Diphtheria, and the Pneumonia-Enteritis complex in swine when caused by or complicated with Sulfa-susceptible organisms.

Active ingredients are Sulfathiazole and Sulfapyridine in sterile solution.

Dose—25 c.c. for each 100 pounds body weight, administered intravenously or intraperitoneally every 12 hours for 3 or 4 days.

GLOBE SULFA SOLUTION,
See Page 22



GLOBE ANTI-HEMORRHAGIC-SEPTICEMIA SERUM (Bovine Origin)

CODE WORD:

- 250-c.c. PackageBORUM
- 100-c.c. PackageBOSEP
- 50-c.c. PackageBOHEM

GLOBE ANTI-HEMORRHAGIC-SEPTICEMIA SERUM (Equine Origin)

CODE WORD:

- 250-c.c. PackageSERFUL
- 100-c.c. PackageSERPES
- 50-c.c. PackageSERWEE

GLOBE SULFANILAMIDE TABLETS, VETERINARY

CODE WORD:

- Bottle of 100
- Thirty-Grain TabletsSULFAN
- Bottle of 100
- Sixty-Grain TabletsSULFIX

GLOBE SULFANILAMIDE BOLUSES

CODE WORD:

- Box of 50 (240-Grain) Boluses...SULTOO
- Box of 12 (240-Grain) Boluses...SULDOZ

INDIGESTION

Indigestion in cattle may arise from many causes, such as overeating, sudden changes in type of feed, eating indigestible substances, and eating spoiled or damaged feedstuffs.

SYMPTOMS

The symptoms seen in cattle suffering from indigestion vary considerably, depending on the cause, the severity of the condition and the portion of the digestive tract that is chiefly involved. Usually there is loss of appetite, constipation, and listlessness. The affected animal no longer "chews its cud" because the rumen or paunch (first stomach) has temporarily

lost its ability to contract. Bloat may or may not be present, depending on the nature of the cause. Succulent green feeds to which the animal is not accustomed are most likely to produce bloat. In acute cases with bloating, the respirations are short and fast, the pulse rapid and the ears cold. The animal may sweat, act restless and appear to have chills.

TREATMENT

In all cases it is essential to empty the digestive tract and stimulate the rumen to contract normally. This may be accomplished in average cases by giving 2 ounces of Globe Veterinary Purgative every 6 hours until a maximum of 3 doses have been given or relief has occurred.

In cases of severe overloading or impaction of the stomach or intestines, a saline purge is preferred. For a grown cow so affected, dissolve one package (1½ pounds) of Globe Bovine Purgative and Carminative in one or more gallons of warm water, add two Globe Rumen Tablets and give as a drench. In 3 or 4 hours, give 2 more Rumen Tablets if necessary. In cases of moderate bloating, give 2 ounces of Globe Equi-Dine mixed with one pint of mineral oil in addition to the above treatment. Bloat may sometimes be so severe that there is danger of death from suffocation unless the pressure is relieved immediately. Mechanical relief may sometimes be afforded by tying a stick (as a bit) in the mouth, or if this fails, by thrusting a trocar and cannula through the abdominal wall into the paunch at a point in the upper left flank midway between the last rib and the point of the hip. This operation releases the gas rapidly in cases of "dry" bloat, but in acute "foamy" bloat, surgery may be necessary.

After recovery from an attack of indigestion, the appetite may be impaired for varying periods of time. Two tablespoonfuls of Globe Veterinary Tonic Powder on the feed twice daily may help to stimulate the appetite in convalescent animals.

GLOBE VETERINARY PURGATIVE

Code Word:

8 OuncesVEPUR

GLOBE BOVINE PURGATIVE AND CARMINATIVE

CODE WORD:

1½ Pound Package.....BOPURG

GLOBE RUMEN TABLETS

CODE WORD:

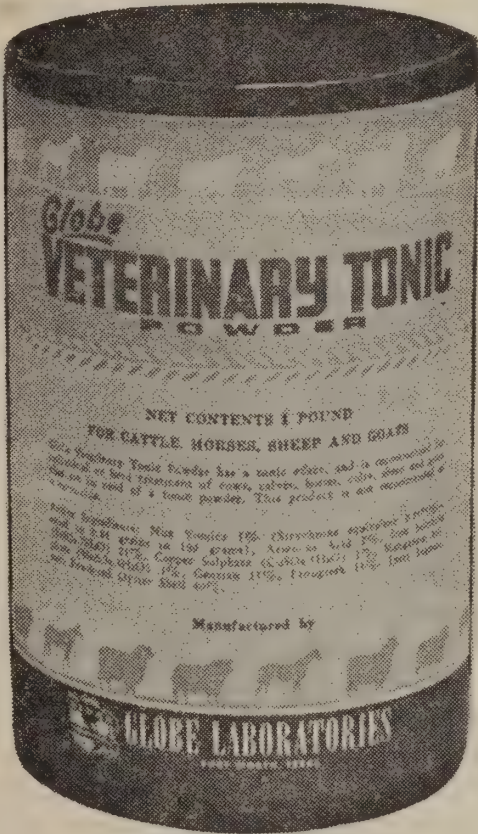
Bottle of 100 Tablets.....RUMEN
Bottle of 50 Tablets.....RULIT

GLOBE EQUI-DINE, See Page 66

GLOBE VETERINARY TONIC POWDER

CODE WORD:

100 PoundsVETFUL
50 PoundsVETL
25 PoundsVETXXV
10 PoundsVETEX
5 PoundsVETOV
1 PoundVET



Trocar (Cattle), Wood Handle, with Plain Cannula—See Page 103.

INTERNAL PARASITES OF CATTLE

Cattle may become infested with a number of worm parasites such as Stomach Worms, Nodular Worms, Hook Worms, Lung Worms, Liver Flukes, and others. The Stomach Worms, Nodular Worms, and Hook Worms are widely distributed, occurring quite commonly in many areas and cause serious losses to cattle raisers. Liver Flukes are less widely distributed, being confined principally to low wet pastures in

certain sections of the country, notably the Gulf Coast region. Fortunately, there are effective remedies available for treating some of the more serious parasites of cattle, but with others, as for example, the Lung Worms, there is no satisfactory treatment at the present time and control of these parasites is dependent largely on pasture rotation, sanitation and good herd management. Worm parasites of cattle are now recognized as much more serious than was generally believed a few years ago.

STOMACH WORMS, NODULAR WORMS, and HOOK WORMS

Calves are much more susceptible to these parasites than mature animals. The Stomach Worms and Hook Worms are blood suckers, and although very small, they may be present in such tremendous numbers that there is serious loss of blood, to say nothing of the irritation caused by repeated puncturing of the mucous membrane which lines the digestive tract. Symptoms shown by affected animals vary according to the degree of infestation. The most common symptoms are loss of weight, anemia, diarrhea, and weakness. The gums and other mucous membranes which are normally a healthy pink color, become pale due to loss of blood. Some animals develop soft doughy swellings in the throat region commonly called "bottle jaw."

Nodular Worms occur in the large intestines and cecum. The immature worms burrow into the lining of the intestine causing the formation of hard nodules. The nodules are more or less permanent even though the adult worms are removed by effective treatment. Consequently, in herds where this parasite is a problem, a program of periodic worming and pasture rotation should be adopted in order to control the degree of infestation in succeeding generations.

TREATMENT

Phenothiazine is one of the most effective drugs for the elimination of the Stomach Worms, Nodular Worms, and Hook Worms that infest cattle. It is available as a drench (Globe Phen-Ovine), in bolus form (Globe Phenothiazine Boluses), and as a powder (Globe Phenothiazine Drench Grade). Individual treatment with Phen-Ovine or Phenothiazine Boluses is generally considered more satisfactory than giving the powder with feed, since the individual dosage can be more accurately controlled.

GLOBE PHEN-OVINE

Give with a metal dose syringe.

DOSAGE:

Cattle—2 ounces for each 100 pounds body weight. Maximum dose 6 ounces.

GLOBE PHEN-OVINE—See page 62.

Dose Syringes—See page 103.

GLOBE PHENOTHIAZINE BOLUSES (12½ grams)

For the elimination of Stomach Worms, Nodular Worms, and Hook Worms from cattle, sheep and goats, and strongyles from horses. Open the mouth with a speculum and deposit the bolus far back in the mouth with a balling gun or by hand. Dipping the bolus in mineral oil will facilitate swallowing. Caution: Use only as directed.

Dose:

Cattle—2 boluses for each 100 pounds body weight. Maximum dose 6 boluses.

GLOBE PHENOTHIAZINE BOLUSES (12½ Grams)—See page 63

PHENOTHIAZINE (DRENCH GRADE)

For the elimination of Stomach Worms, Nodular Worms, and Hook Worms from cattle, sheep and goats, Strongyles from horses and Nodular Worms from swine. Partially effective for the elimination of Large Roundworms from swine. This product may be mixed with water and given as a drench or may be mixed with the feed.

GLOBE PHENOTHIAZINE (Powder) (Drench Grade)—See page 62

LIVER FLUKES

There are two species of liver flukes which infest cattle in the United States. The common liver fluke, *Fasciola hepatica*, is the most important. It is a flat leaf-shaped worm about one-half inch long which in the adult stage is found in the bile ducts of the liver. Fluke infested cattle gain only about half as much weight as non-infested cattle, even when eating the same amount of feed. In addition to this loss, vast quantities of beef liver are condemned each year in packing houses because of damage by flukes. It has been estimated that

the average annual loss due to liver flukes in this country is in excess of 1200 tons of meat. Heavy infestations in dairy cattle may lead to a decrease of as much as 16% in milk production.

SYMPTOMS

Since liver flukes are bloodsuckers, anemia, as indicated by pale mucous membranes, is a prominent symptom. Damage to the liver leads to digestive disturbances, loss of weight, and general weakness. Usually the affected animal is constipated, but with severe liver damage there may be a profuse diarrhea.

TREATMENT

A drug known as Hexachlorethane has, in recent years, been found to be highly effective in removing adult flukes from cattle. Globe Hexa-Glo Cattle Drench is a suspension of Hexachlorethane especially compounded for this purpose. The drench is easily administered with an ordinary dose syringe, using 6½ fluid ounces for adult cattle, 3¼ fluid ounces for yearlings and calves. There is no necessity to treat calves under 3 months of age. Good results may be expected from two treatments each year, preferably in the Spring and Fall. One gallon of Hexa-Glo Cattle Drench is sufficient to treat 20 adult animals or 40 calves.

GLOBE HEXA-GLO CATTLE DRENCH

CODE WORD:

1 GallonHEXGLO

MALIGNANT EDEMA

CAUSE

The Clostridium septicum organism.

This disease resembles Blackleg, producing swellings under the skin, and results in death in a few hours. Malignant Edema is often a wound infection and may follow castration or injuries inflicted while calving. Cattle of all ages are susceptible.

SYMPTOMS

Symptoms are very similar to Blackleg. The onset of this disease is sudden; often one or more animals are found dead before the presence of any illness in the herd is noticed. There is a high fever associated with swellings under the skin or in a group of muscles. This disease is very commonly confused with Blackleg and in some territories is found as a complication of Blackleg.

POST-MORTEM FINDINGS

A reddish, foamy liquid is found in the swellings when cut with a knife. If the muscle tissue is affected, it may be dark in color, similar to the lesions of Blackleg.

PREVENTION

The use of a 5 c.c. dose of Clostridium-Chauvei-Septicus Bacterin as a protection against both Blackleg and Malignant Edema is becoming popular in areas where Malignant Edema has been previously reported.

TREATMENT

Because of the rapid course of this disease, treatment is of little or no value.

REMARKS

When losses occur in animals that have been properly vaccinated against Blackleg, the presence of Malignant Edema should be suspected and all animals in the herd, regardless of age, should be promptly vaccinated with Clostridium-Chauvei-Septicus Bacterin.

GLOBE CLOSTRIDIUM-CHAUVEI-SEPTICUS BACTERIN

CODE WORD:

50-Dose Package (250 c.c.) CLAUFUL

10-Dose Package (50 c.c.)CLAUT

5-Dose Package (25 c.c.)CLAU

MASTITIS

(Garget)

Mastitis is usually due to a Streptococcus and in many instances a Staphylococcus infection of the udder; however, other organisms, such as Corynebacterium pyogenes and Escherichia coli, are sometimes involved. Injuries to the udder and exposure of animals to contaminated bedding, dirty lots, etc., are often the forerunners of acute Mastitis. After the disease has made its appearance in a herd, careless milking or the improper sterilization of teat cups in milking machines between cows may transmit the disease from infected to non-infected udders.

SYMPTOMS

In acute attacks, there may be a sudden decrease in the normal milk flow. The milk from the affected quarters may be watery, lumpy, stringy, bloody, or contain yellowish clots. The udder is generally sore, hot, and painful.

In Chronic Mastitis, the affected quarter contains hard areas or lumps which may be confused with bruises. The milk appears normal except when periodic flare-ups occur, and it becomes stringy or flaky.

By milking the first two or three streams of milk into a strip cup, the presence of flakes, yellowish clots, or threads is readily detected. To test apparently normal milk for Mastitis, the Brom Thymol Blue Test Blotter Squares may be used. Normal milk develops a yellowish green color, while a dark green color signifies the presence of Mastitis. This test is not 100% effective, but may serve to detect cases that would otherwise escape notice. False positive reactions may sometimes occur in the very early and very late stages of the lactation period.

PREVENTION

The detection and segregation of all affected cows from the herd is essential and they should be milked last. Wet milkers should not be tolerated as this affords an excellent opportunity for the spread of the disease from an infected quarter to a non-infected quarter. "Knuckling" and other harsh methods of stripping should not be permitted in the milking operation as these methods weaken the quarter to the extent that infection more readily gains a foothold. Contaminated bedding, flies, and injuries to the teats and udder also promote spread of the disease. Spraying the stable and the cattle with Globe Livestock Spray will help control flies which are capable of spreading Mastitis. Hands, teat cups and the udder should be washed before milking with a solution of one tablespoonful of Globe Odorless Disinfectant to 2 gallons of lukewarm water. Bacterins are frequently used to help increase body resistance to the organisms most commonly found in Mastitis.



TREATMENT

Before the successful treatment of Mastitis can be accomplished, it must be kept in mind that this undertaking is primarily a "herd problem." With the advent of Sulfanilamide-in-oil and other intramammary infusions, a practical method of treating this disease in individual cows was attained, but the spread of the disease from one animal to another in the herd must be controlled by other measures. Strict sanitary and hygienic measures must be adopted in the mastitis-infected herd in order to stop the spread of the disease from infected cattle to non-infected cattle.

Frequent milking of affected quarters relieves the pressure within the bag and allows healing processes to take place more quickly. Affected quarters should not be milked on the floor of the milking barn but should be milked into a bucket containing one quart of water to which has been added from one to two tablespoonfuls of Globe Odorless Disinfectant, and then this infected milk should be discarded in such a manner so as to prohibit non-infected cattle from gaining access to it.

For intramammary infusion of quarters affected with Streptococcus or Staphylococcus Mastitis, either Globe Sulfa-Mastol or Globe Penicillin may be used.

Globe Sulfa-Mastol, when injected directly into the udder by way of the teat canal, is well tolerated and readily absorbed by the mammary gland. No contraindications have been found, and no decrease in milk production during or after treatment has been observed. This product may be used in both lactating and non-lactating udders. Udder infection in dry cows may lie dormant during the dry period, and in such suspected cases, it is advisable to treat the animals at this time as the treatment may be more effective. In treating STREPTOCOCCIC MASTITIS, milk the affected quarters dry, then inject 50 c.c. of Globe Sulfa-Mastol into each infected quarter by means of an ordinary veterinary vaccinating syringe fitted with an udder infusion tube. After 24 hours, milk the quarter dry and repeat the injection. Continue treatment in this manner until at least four daily injections have been made. If the quarter continues to show signs of infection, repeat the treatment immediately using 100 c.c. of Sulfa-Mastol for each injection.

STAPHYLOCOCCIC MASTITIS—Give at

least 4 daily injections of 100 c.c. each as outlined above. Repeat if necessary.

If because of heavy production it appears necessary to milk out the quarter every 12 hours, the injections of Sulfa-Mastol should be made at 12-hour intervals instead of 24 and continued for four days.

IMPORTANT: Thoroughly cleanse the teat and udder with a solution of Globe Odorless Disinfectant before each treatment. The vaccinating syringe and udder infusion tube should be thoroughly cleaned and boiled before use. Do not use milk from infected quarters for human consumption during the treatment period.

In Bovine Streptococcic Mastitis, Globe Sulfanilamide Tablets or Boluses may be administered by mouth as supportive treatment in conjunction with infusion of affected quarters with Globe Sulfa-Mastol. Sulfanilamide by mouth alone cannot be depended upon to cure Mastitis, although temporary improvement in the symptoms is generally noted. This line of treatment is apparently most effective in cases of Acute Streptococcic Mastitis.

Globe Penicillin is recommended for the treatment of Mastitis due to Streptococcus or Staphylococcus. The drug is dissolved in Sterile Distilled Water and injected into the udder in exactly the same manner as described above for Sulfa-Mastol. Directions as to dosage and number of injections recommended are furnished with each vial of Globe Penicillin.

Globe Glo-Stix Penicillin Bougies represent a new type Penicillin product for insertion into the udder through the teat canal. Each "stick" or bougie contains 25,000 units of Procaine Penicillin G in a special milk soluble base. In the treatment of Streptococcus Mastitis one or more Glo-Stix are inserted into the teat canal after each milking. The Glo-Stix are allowed to dissolve and then the udder is massaged upward to distribute the penicillin throughout the milk cistern.

Glo-Stix are easy to use. No insoluble greasy ointments, no instruments required.

In cases of minor congestion of the udder associated with calving, chilling, or bruising, apply towels wrung out in hot Epsom Salts water for at least 15 minutes. Milk out dry. Then apply Globe Udder Ointment or Globe Z-O Udder Ointment freely and massage for fifteen minutes or longer. Repeat 2 or 3 times daily as long as necessary. Globe Z-O Udder Ointment is also a soothing protective dress-

ing for chapped or chaffed teats, scratches, and superficial abrasions of the udder.

GLOBE SULFA-MASTOL

(Formerly Globe Sulfa-Uderol)

CODE WORD:

250-c.c. BottleUDEROL



GLOBE PENICILLIN

CODE WORD:

100,000-Unit Vial.....
200,000-Unit Vial.....

GLOBE GLO-STIX PENICILLIN BOUGIES

(25,000 Units)

CODE WORD:

Package of 25 Bougies.....PENBIG
Package of 12 Bougies.....PENDOZ
Package of 6 Bougies.....PENS

GLOBE LIVESTOCK SPRAY

See Page 75

STERILE DISTILLED WATER, U.S.P.

CODE WORD:

50-c.c. Vial

GLOBE Z-O UDDER OINTMENT

CODE WORD:

1-Pound JarZOL
4-Ounce JarZO

GLOBE UDDER OINTMENT

CODE WORD:

14-Ounce JarOMFUL
4-Ounce JarOMAS

Globe Sulfanilamide Boluses, Veterinary—
See Page 32.

Globe Sulfanilamide Tablets, Veterinary—
See Page 32.

GLOBE ODORLESS DISINFECTANT (Formerly Dairy Disinfectant)

An efficient and economical disinfectant and antiseptic of high germicidal potency for milking machines, utensils, flanks, udders, and milkers' hands. Odorless, non-corrosive, quick-acting, stable in hot or cold solutions. The active ingredient is Para tertiaryoctyl phenoxy ethoxy ethyl di-methyl benzyl ammonium chloride, one of the most modern types of disinfectants and antiseptics.

CODE WORD:

GallonODORLES
QuartODOR

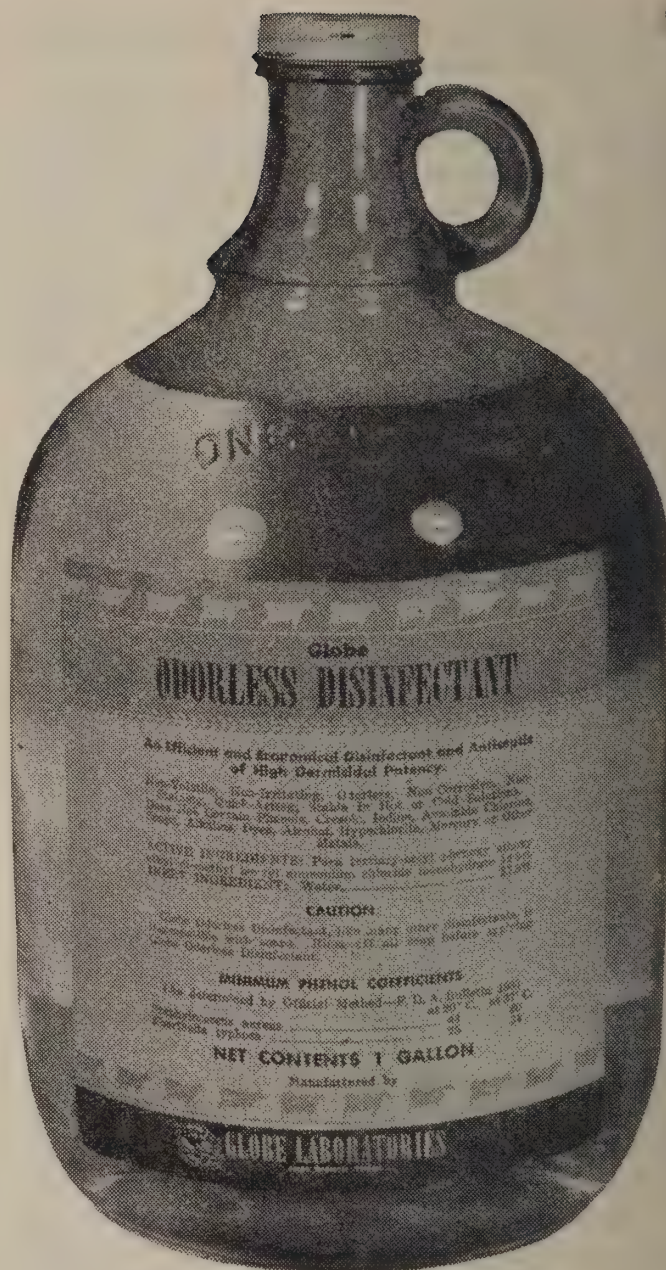
METRITIS

(INFLAMMATION OF THE UTERUS)

This condition is the result of a bacterial infection in the uterus, producing considerable congestion and inflammation. Laceration at the time of calving, or retention of the afterbirth are the principal causes. When the afterbirth is retained, it putrefies rapidly and the poisonous toxins formed are absorbed by the animal, resulting in a toxemia, loss of appetite, fever, and may terminate in the death of the animal.

SYMPTOMS

Affected cows have a vaginal discharge ranging from clear mucus to a foul-smelling, discolored and sometimes bloody material. Straining is a prominent symptom, as is loss



of weight. Inappetence is evidenced in cases of long standing, in which toxemia has developed from absorption of poisons that have formed in the uterus.

PREVENTION

Provide clean calving stalls. Before rendering necessary assistance to cows which have difficulty in calving or assisting in the removal of the afterbirth, the operator should disinfect his hands and arms, as well as the external genital parts of the cow with Globe Odorless Disinfectant. Insert at least three Globe Uterine Capsules or Boluses into the uterus after the operation is completed.

TREATMENT

Keep the cow's bowels open by giving one and one-half pounds Globe Bovine Purgative

and Carminative in at least one gallon of water to each full grown animal. To this may be added from 2 to 3 Globe Rumen Tablets to stimulate stomach contractions which are often stopped by the absorption of toxic products from the womb.

Globe Uterine Boluses provide a ready source of sulfanilamide, sulfathiazole, and urea, and are the product of choice in the treatment of infections of the uterus. Use 3 to 6 boluses, depending on the size of the animal and the severity of the condition. Insert boluses deep into the cavity of the uterus, after cleansing the external genital parts of the cow and the hands and arms of the operator. Repeat treatment in 24 hours if necessary.

In addition to the above treatment, inject deep into the muscle 10 c.c. of Globe Glo-Bestrol to hasten release of the afterbirth and evacuation of pus and uterine secretions. Symptoms of heat will be seen within 24 to 72 hours after the injection, but the cow should not be bred at this time and certainly not until all discharges have ceased. In acute cases where there is danger of blood poisoning from Streptococcus infection, administration of Globe Sulfanilamide Tablets or Sulfanilamide Boluses by mouth is recommended.

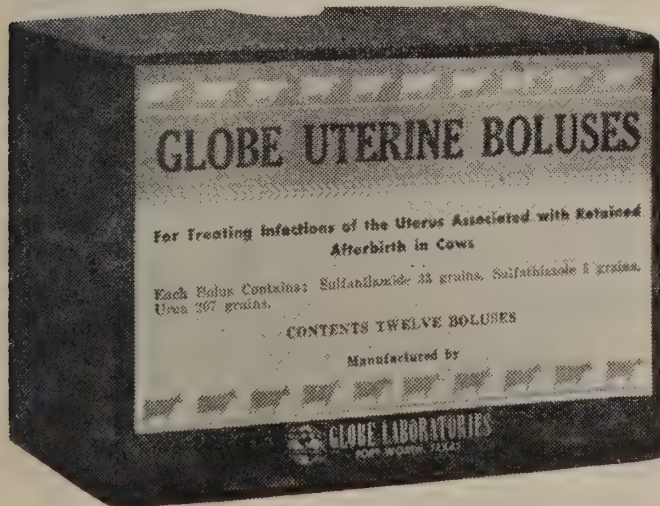
REMARKS

Metritis often becomes chronic, if proper precautions are not taken, and may result in sterility.

Globe Uterine Boluses

CODE WORD:

Box of 12 Boluses.....UTBOL



Globe Uterine Capsules

CODE WORD:

Box of 12 CapsulesUTEFUL
Box of 3 CapsulesUTE

Globe Glo-Bestrol

CODE WORD:

30-c.c. PackageBEST

Globe Bovine Purgative and Carminative—
See Page 33.

Globe Rumen Tablets—See Page 33.

Globe Odorless Disinfectant—See Page 38.

Globe Sulfanilamide Tablets, Veterinary—
See Page 32.

Globe Sulfanilamid Boluses—See Page 32.



MILK FEVER

Milk Fever usually occurs in cows a few hours to a week or more following calving. Occasionally it may occur shortly before calving. The exact cause of this disease has not been definitely established; however, the calcium content of the blood is below normal and the majority of cases respond favorably to injections of products containing calcium. Sometimes Milk Fever is complicated with Acetonemia (see page 16).

SYMPTOMS

The onset of this disease is usually sudden. There is a complete lack of appetite, nervousness, spasms, then collapse and finally loss of

consciousness. The neck assumes an S-like curve which is characteristic of Milk Fever.

TREATMENT

Cal-O-Dex is an effective treatment for this disease. Administer 250 to 500 c.c. intravenously or intramuscularly, and repeat in 12 to 24 hours if necessary. Recovery is usually prompt if treatment is given early.

REMARKS

Recurrence of this condition a few days following recovery from the initial attack, while unusual, does occur. It is a good plan to supplement the feed with molasses or syrup for a few days following recovery. Feeding rations adequate in minerals is recommended during pregnancy.

Globe Cal-O-Dex

For use in the correction of Blood-Calcium Deficiencies (especially Milk Fever in cattle), Hypoglycemia, and Acetonemia.

CODE WORD:

500-c.c. BottleKALBIG
250-c.c. BottleKALGLU



PINK EYE

Apparently "Pink Eye" or Bovine Keratitis is not a specific condition in the sense that it is always caused by one specific agent. Seemingly, there are several forms of this condition.

In the infectious form, Streptococci, Staphylococci, and occasionally other organisms are

present. In some cases, these bacteria appear to be the primary cause, while in other cases, they assume the role of secondary invaders.

In the allergic form, there is a sensitivity of the tissues, particularly the eyes, to dust, certain proteins, and sunlight. Deficiencies of minerals and vitamins, especially Vitamin A, may be predisposing factors.

SYMPTOMS

Affected animals have a tendency to keep the eyes closed or to avoid light. The eyelids become reddened, hot and swollen, and there is a watery discharge which later contains pus. As the disease progresses, the deeper structures of the eyes become involved and a whitish scum forms over the eyeballs, making it impossible for the animal to see.

PREVENTION

Because Pink Eye may be due to so many different factors, there is no certain means of prevention. Bacterins containing the organisms commonly found in cases of Pink Eye have been used for a number of years in an attempt to increase body resistance to these particular organisms.

TREATMENT

Since an injured or diseased eye is more highly sensitive to the rays of the sun than a normal eye, it is essential that animals affected with Pink Eye be protected from the sunlight. Placing the animal in a dark stall is highly beneficial, but since this disease takes the majority of its toll during Spring or Fall, when pastures are abundant, this is far from practical in most cases. If possible, keep affected animals in the shade. Apply Globe "Pink Eye" Prescription to all affected eyes once or twice daily until symptoms have completely subsided. "Pink Eye" Prescription is a fine powder containing Sulfanilamide, Sulfathiazole sodium, Boric Acid, and Proflavine Sulfate. It is supplied in a 10-gram puffer tube and can be puffed directly into the eye or under the eyelid merely by pressing on the sides of the tube.

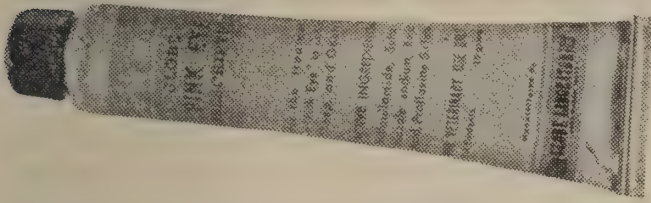
REMARKS

It is essential in treating this condition to feed balanced rations containing the essential vitamins and minerals. If green pasture is not available, feed green leafy alfalfa hay as a source of Vitamin A.

GLOBE "PINK EYE" PRESCRIPTION

CODE WORD:

10-Gram Puffer Tube.....PINKI



GLOBE ZINC-BUTYN EYE OINTMENT

A soothing, lubricating, local-anesthetic ointment for the relief of painful conditions of the eyes. Active Ingredients: Zinc Sulphate, Butyn Sulphate.

Code Word:

½-Ounce TubeZINCO

PNEUMONIA

Pneumonia is an inflammation of the lungs. It is oftentimes associated with Shipping Fever or Hemorrhagic Septicemia. Pneumonia in cattle is nearly always an infectious disease, although occasionally it is caused by the accidental entrance of foreign material into the lungs. There is no satisfactory treatment for foreign body pneumonia. Many different species of bacteria have been incriminated as causative agents in the infectious types of Pneumonia. Some of these germs are ever present in normal animals and produce the disease when the animal's resistance is low. Predisposing causes of Pneumonia are chilling, crowding, malnutrition, and all other factors which lead to decreased resistance and vitality.

SYMPTOMS AND LESIONS

Cattle and calves affected with Pneumonia usually have a high fever. They appear dull and listless; there is rapid breathing and loss of appetite.

On post-mortem examinations, the principal lesions are found in the lungs. The surface of the lungs presents a marbled appearance and there are dark colored areas where the tissue has lost its soft spongy character and become firm, as a result of the inflammation. On cutting through the lungs, it may be noted that there is an excess of fluid in the lung tissue and sometimes areas of pus pockets may be found.

PREVENTION

Avoid, in so far as possible, exposure to cold, crowding, malnutrition, and other predisposing factors. For other preventive measures, see Page 31, Hemorrhagic Septicemia.

TREATMENT

In recent years, Sulfathiazole has been found

to give very satisfactory results in many cases of Pneumonia in cattle. Globe Sulfathiazole Boluses, 240-grain, or Globe Sulfathiazole Tablets, 60-grain, are recommended. The dose is one grain per pound body weight per day for 3 or 4 days. Divide each daily dosage into three equal portions and administer at 8-hour intervals. The tablets or boluses may be given with a balling gun or may be crushed, mixed with water, and given as a drench.

Globe Sulfa-Solution may be used instead of Sulfathiazole Boluses with equally good if not better results. Give Sulfa-Solution intravenously or intraperitoneally, using 25 c.c. for each 100 pounds body weight. Repeat this dose every 12 hours for 3 or 4 days. Globe Sulfa-Solution produces a more rapid response and, in many cases, is easier to administer than any of the sulfa tablets. When desired, a single dose of Sulfa-Solution may be given for quick response followed by Sulfanilamide Tablets or Boluses by mouth or in the feed according to label directions. The two products should not be given simultaneously for this would result in excessive dosage of total Sulfa.

In addition, give from 100 to 500 c.c. of Anti-Hemorrhagic-Septicemia Serum according to label directions and repeat in 24 hours if necessary.

GLOBE SULFATHIAZOLE TABLETS, VETERINARY

CODE WORD:

Bottle of 100

Sixty-Grain TabletsNEWTAB

Bottle of 50

Sixty-Grain TabletsNEWLET

GLOBE SULFATHIAZOLE BOLUSES VETERINARY

CODE WORD:

Box of 50 (240-Gr.) Boluses.....NEWBOL

Box of 12 (240-Gr.) Boluses.....NEWDOZ

GLOBE ANTI-HEMORRHAGIC-SEPTICEMIA SERUM

See Page 32

GLOBE SULFA-SOLUTION

See Page 22

PRUSSIC ACID POISONING (CYANIDE POISONING, CANE POISONING, HYDROCYANIC ACID POISONING)

This condition affects cattle and sheep of

all ages grazing on Johnson grass, sorghum, flax, arrow grass, velvet grass, Sudan grass, Christmas berry, black cherry and choke-cherry at certain times, and is due to the presence in such plants of hydrocyanic acid, which it is believed develops from various glucosides. This acid develops during abnormal conditions when growth has been stopped by drought, frost, bruising, trampling, wilting, mowing, or other causes.

The second growth of all canes and sorghums is especially high in hydrocyanic acid content.

The action of cyanides on the animal body is described as "suspension of the activity of all forms of living matter." The red blood cells are altered so that no exchange of gases between the tissues occurs, and the animal dies of asphyxiation.

SYMPTOMS

Symptoms appear suddenly, and death may occur so rapidly that little time is available for treatment. In some cases, symptoms are slower in development, and animals may be saved if the proper antidote is readily available and administered promptly.

Generally, the first symptoms are: muscular trembles, incoordination of movement, staggering gait followed rapidly by inability to stand, breathing becomes increasingly difficult and the animal resorts to open-mouthed breathing.

Later, convulsions develop, followed by death—unless the antidote is administered promptly. If the dose of poison consumed is not too large, the acute distress subsides and the animal may recover within a few hours. Usually a number of animals on the same pasture or field are affected at one time.

The United States Department of Agriculture Year Book for 1935 reports that: "A combination treatment of sodium nitrite and sodium thiosulphate has been shown capable of neutralizing three times the lethal dose of prussic acid. The combination is nearly twice as efficient as either remedy used by itself.

"In the combination treatment, Sheep weighing approximately 100 pounds are treated with 10 c.c. of 10% Sodium Nitrite and (simultaneously) about 6 to 15 c.c. of Sodium Thiosulphate 30%, injected intraperitoneally.

"In the case of cattle weighing 500 pounds or more, the injections of 20 to 30 c.c. of Sodium Nitrite 10% and 35 to 65 c.c. of

Sodium Thiosulphate 30% are made by the intravenous route.

"The Sodium Thiosulphate dosage may be repeated in about four hours, but only one injection of the Sodium Nitrite should be given, on account of its toxic properties."

PREVENTION

Care should be exercised to prevent animals from grazing in pastures or fields containing the plants mentioned, when there is a suspicion that such plants may contain hydrocyanic acid. In case of doubt, it is best to permit but one animal access to such plants for a short period of time before admitting the balance of the herd.

Because of the fact that this condition develops quickly, it is always advisable to have readily available a sufficient quantity of the antidote—

Globe Treatment for Prussic Acid Poisoning

(1) Globe Sterile Sodium Nitrite Solution 10%

(2) Globe Sterile Sodium Thiosulphate Solution 30%

—so that immediate treatment may be administered. This precaution will be the means of saving many animals.

Insert needle (ordinary vaccinating needle may be used) into the jugular vein or tail vein. Attach syringe containing Globe Sterile Sodium Thiosulphate Solution 30%, and inject the desired dosage. Disconnect syringe from needle, leaving needle in the vein. Draw Globe Sterile Sodium Nitrite Solution 10% into the syringe, connect with needle in the vein, and inject the desired dosage. If for any reason injections cannot be made intravenously (into either of the veins mentioned above), the injections may be made intraperitoneally (into the abdomen), as recommended for sheep.

GLOBE TREATMENT FOR PRUSSIC ACID POISONING IN CATTLE AND SHEEP

CODE WORD:

One Complete Treatment: One 60-c.c. Sodium Thiosulphate Solution 30%; One 30-c.c. Sodium Nitrite Solution 10%.....PRUSS

GLOBE THIO-NITRO TABLETS

For use as an antidote for Prussic Acid Poisoning in cattle, horses, sheep, and swine in conjunction with other treatment if needed.

Active Ingredients: Sodium Thiosulphate, Sodium Nitrite.

CODE WORD:

Bottle of 100 TabletsTHIOBIG
Bottle of 50 TabletsTHIO

RED WATER DISEASE
(BACILLARY HEMOGLOBINURIA
OF CATTLE)

CAUSE

The Clostridium hemolyticum organism. Red Water Disease or Hemorrhagic Disease or Bacillary Hemoglobinuria is a bacterial disease affecting cattle and sheep. Red Water Disease occurs most frequently in swampy, poor-drained areas and excessively irrigated pastures, being most prevalent during the summer and early fall. Geographically, the disease is known to occur chiefly in the mountain valleys of low to moderate elevation in the Sierra Nevada and Coast ranges in the United States, and the Andes in Chile, South America, and is caused by an anaerobic germ (Cl. hemolyticum) which in all probability gains entrance into the body with the food and water supply. Apparently, the disease is not transmitted directly by a sick animal to a well animal. This germ, while growing in an animal's body, produces a toxin or poison which destroys the red blood cells with great rapidity, producing anemia and death. The death rate in affected cattle is estimated to exceed 90%.

SYMPTOMS

This disease develops suddenly, death usually occurring in twenty-four to thirty-six hours after the first symptoms appear. Animals have a high temperature (103° to 106°F.) and loss of appetite. The principal and characteristic symptom is a dark port wine colored urine, occasionally associated with hemorrhages from the bowels. Milk flow ceases.

POST-MORTEM LESIONS

On post-mortem examination, bloody discharges from the natural body openings are observed. Numerous hemorrhages occur on the serous membranes lining the chest and abdomen. The characteristic pathological lesion is a large hemorrhagic infarct, (an obstruction or embolus) usually located on the upper or lower extremities of the liver. The urine, if any, contained in the bladder is dark port wine colored.

PREVENTION

The preventive measure generally and most effectively employed is vaccination of all animals in infected territories with Clostridium-Hemolyticum Bacterin (Red Water Vaccine). The dosage for cattle is 10 c.c., sheep 5 c.c., injected beneath the skin. It is advisable in those localities where the disease is more or less prevalent to vaccinate all susceptible animals in the spring and fall.

GLOBE CLOSTRIDIUM-
HEMOLYTICUM BACTERIN

CODE WORD:

500-c.c. PackageREDFUL
250-c.c. PackageRED
100-c.c. PackageREDDY

GLOBE MIXED BACTERIN (Bovine)
Formula 1 (Whole Culture)

Recommended to help prevent conditions due to the organisms listed in the formula.

CODE WORD:

250-c.c. PackageBUNFUL
125-c.c. PackageBUNBIG
50-c.c. PackageBUNMED
25-c.c. PackageBUNWEE

GLOBE MIXED BACTERIN (Bovine)
Formula 2 (Whole Culture)

Recommended to help prevent conditions due to the organisms listed in the formula.

CODE WORD:

125-c.c. PackageMAFUL
50-c.c. PackageMATI
25-c.c. PackageMAST

GLOBE MIXED BACTERIN
(Bovine) Formula 3

May help prevent conditions attributed to the organisms listed in the formula which were isolated from the tissues of calves.

CODE WORD:

125-c.c. PackageCALFUL
50-c.c. PackageCALFO
25-c.c. PackageCALSO

SWINE SECTION

BRUCELLOSIS (INFECTIOUS ABORTION)

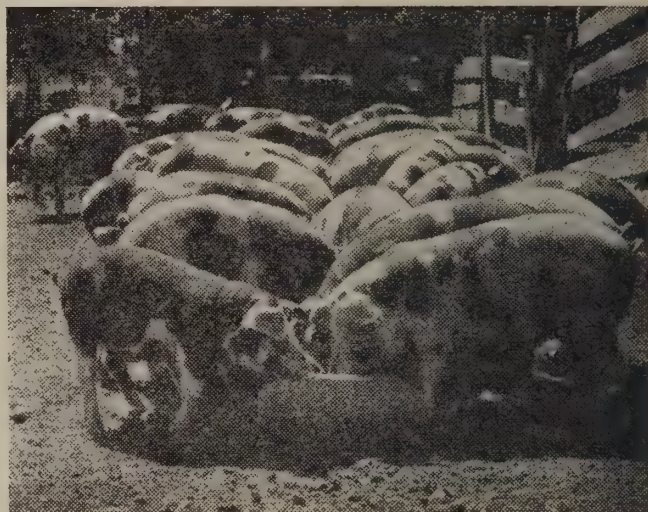
Infectious Abortion in swine is caused by *Brucella suis*, an organism closely related to *Brucella abortus* which causes Contagious Abortion in cattle. Although Bovine Abortion and Swine Abortion are similar in many respects, there is no transmission, under ordinary conditions, of the swine type to cattle or the cattle type to swine. Man, however, may acquire the infection from either cattle or swine, but the swine type is apparently more serious in man than the bovine type.

Infectious Abortion in swine is usually introduced into a herd by bringing in infected animals from the outside. Once the infection has become established in the herd, it may spread from animal to animal in various ways, such as eating aborted fetuses and afterbirths, contaminated feed and water, and contact with the discharges from infected animals.

The only pronounced symptom in sows is abortion, usually during the third month of pregnancy. An infected sow may deliver dead fetuses, some of which are only partially developed, indicating death of the fetus some time before abortion occurred. The fetal membranes may show extensive hemorrhages. Sows that abort fairly early in pregnancy may have a vaginal discharge for varying periods of time, but in the average case, this is not a prominent symptom. The infection may sometimes localize in joints causing arthritis and lameness, and also in various organs of the body producing abscesses which are detected only on postmortem examination. Infectious Abortion of swine can be diagnosed by use of the agglutination test, as used for Bang's Disease in cattle. It is not quite as reliable in swine as in cattle but serves very well to tell the general incidence of infection in a herd.

In boars the infection may localize in the genital organs with severe swelling and damage to the reproductive tissues. Infected boars transmit the disease readily to sows and, as a result of tissue damage, may frequently become sterile. Infected boars should be marketed for slaughter, and only non-infected boars should be used for breeding purposes.

SWINE ERYSIPELAS



Swine Erysipelas is an infectious disease of swine caused by the germ, *Erysipelothrix rhusiopathiae*. As a rule, this disease occurs principally in the field in three forms: (1) The acute septicemic form, (2) the chronic form, and (3) a very mild form commonly referred to as Diamond Skin Disease.

SYMPTOMS

At the present time, the acute septicemic form seems to occur more often than other forms. This form causes the heaviest losses, particularly in pigs. Affected animals suddenly appear ill. Temperatures are extremely high in the early stages. The skin may show red discolorations, very noticeable in white-haired animals. Death may occur within a few days after symptoms are noticed.

The chronic form of the disease is more prolonged but also causes considerable losses. Affected animals may manifest difficult breathing, swollen joints associated with considerable soreness and stiffness, causing a tendency to walk on the toes. The skin may be reddish-purple in color.

The principal symptoms noted in the mild form are reddish, diamond-shaped eruptions (Diamond Skin Disease). The losses in this form of the disease are very low.

POST-MORTEM LESIONS

It is usually difficult to differentiate Swine Erysipelas in the field from Hog Cholera, Hemorrhagic Septicemia, Enteritis, and other acute infections. Post-mortem examination may not reveal any characteristic lesions in some animals. In some animals, the lining of the stomach may show many areas of a brilliant red color. The spleen may be enlarged. The lungs may be covered with red blotches and may be engorged with blood. The liver may be swollen. In the chronic form, cauliflower-like growths may be found attached to the valves of the heart. The heart should always be opened and the valves examined for these growths.

It is becoming a practice in the field, as an aid in the diagnosis of this disease, to administer Anti-Swine-Erysipelas Serum, in treatment dosage, to two or three sick pigs selected from the herd. If the pigs receiving the serum do not show improvement within twenty-four hours, the probabilities are that the disease is not Swine Erysipelas, and further effort should be made to determine the true cause of the condition. If the serum-treated pigs show marked improvement within twenty-four hours, the probabilities are that the disease affecting the animals is Swine Erysipelas, and it would appear advisable to administer Anti-Swine-Erysipelas Serum, in the proper dosage, to all of the animals in the herd. Dosage: For prevention—for pigs up to 70 lbs., 3 to 5 c.c.; 70 to 150 lbs., 10 c.c.; 150 lbs. and over, 10 to 20 c.c. For treatment—At least double the preventive dosage, repeated in 24 hours if necessary.

TREATMENT AND CONTROL

Anti-Swine-Erysipelas Serum produces a high degree of protective immunity lasting, under usual field conditions, for approximately two weeks. Animals having the disease or coming in contact with it within two weeks after receiving the proper serum dosage may develop some degree of active immunity lasting, at times, for a considerably longer period. Outbreaks of the disease are usually promptly checked following the administration of the proper serum dosage, and exposed animals usually protected.

REMARKS

Globe Anti-Swine-Erysipelas Serum is prepared from the blood of horses which have been hyperimmunized over a period of months by the administration of increasingly large doses of virulent cultures of the organism, *Erysipelothrix rhusiopathiae*. Each serial lot is tested for potency on white mice, which are highly susceptible to the disease, and for purity on guinea pigs or rabbits. Only serum of high potency and purity is marketed under the Globe label.

GLOBE ANTI-SWINE-ERYSIPELAS SERUM

CODE WORD:

250-c.c. Package	SIPFUL
100-c.c. Package	SIPMED
50-c.c. Package	SIP

EXTERNAL PARASITES OF SWINE

The principal external parasites of swine are the hog lice and the sarcoptic mange mites.

The hog louse is one of the largest of the various species of lice that attack domestic animals. It is a blood-sucking louse which multiplies rapidly, soon overrunning the infested pig if control measures are not enforced. Hog lice can be easily controlled by spraying or dipping with Globe Dip, Globe Glo-Cide 25, or Globe Glo-Dane 45 diluted with water according to label directions. Globe Livestock Spray, an oil base spray to be applied lightly with an ordinary hand sprayer, is also very effective. In cold weather or when for any reason dipping or spraying is undesirable, effective results will be obtained by dusting infested animals with Globe A-D-A Lice Powder.

Sarcoptic mange is caused by a tiny insect (mite) which burrows into the skin causing severe itching, irritation, inflammation, and the formation of scabs and crusts. The disease usually appears first on the head and face, then spreads backward until the entire body may become involved. Mange is a contagious disease, spreading readily from animal to animal. Treatment should be started early, for

HEMORRHAGIC SEPTICEMIA (SWINE PLAGUE)

(See Cattle Section, Page 31)

if the disease reaches an advanced stage, prolonged treatment may be required for complete recovery.

All hogs in an infested herd should be treated, including those that show no evidence of the disease. Some of these may have light infestations not yet apparent to the eye. Globe Glo-Dane 45 containing "Chlordane" is highly effective for controlling hog mange. One pint of concentrate diluted with water makes 24 gallons of finished spray or dip.

GLOBE DIP, See Page 24

GLOBE GLO-CIDE 25, See Page 26

GLOBE A-D-A LICE POWDER
See Page 101

GLOBE LIVESTOCK SPRAY
See Page 75

GLOBE GLO-DANE 45, See Page 27

SWINE FLU

Swine Flu is the term which has been applied to a disease affecting the respiratory tract of swine. The causative agents consist of a filterable virus and a bacterium (*Hemophilus suis*), both of which must be present to produce clinical symptoms. Swine Flu occurs chiefly in the fall and winter. It is highly contagious and may spread through the entire herd within 2 or 3 days.

SYMPTOMS

This disease has a sudden onset in the herd and is characterized by coughing, high temperature and difficult breathing. In uncomplicated cases, losses are light (seldom exceeding 10% of the herd), and recovery is complete in a week or 10 days.

During the course of this disease, the animal's resistance is greatly lowered, allowing complications to set in which usually increase the mortality rate tremendously.

POST-MORTEM LESIONS

A bloody fluid may be found in the pleural cavity, the lymph glands in the neck region are congested, and the bronchi are filled with a heavy mucus. Dark red, raised areas of solidification in the lungs are typical of this infection.

HOG CHOLERA

Hog Cholera is a highly fatal infectious disease of swine, occurring particularly in those localities where hogs are raised in large numbers. This is the most serious disease of swine, causing extremely heavy losses in animals that have not been immunized against it.

The disease is caused by a filterable virus, which means that the germ is so small that it passes through the finest filters and cannot be seen with ordinary high powered microscopes. The virus is present in the blood and all of the body organs and tissues, as well as in the secretions from the eyes and nose, the urine, and feces. The body excretions contaminate the ground, feed and water supply, and are the principal means of transmitting the disease to healthy animals in the same lot or pasture.

The disease is carried from infected animals on infected premises to non-infected animals and non-infected premises by man, dogs, and other animals, birds, and probably some insects.

Under normal conditions, the incubation period of the disease is 3 to 7 days, which means that an animal will remain perfectly

PREVENTION

Provide warm, clean, dry quarters for the herd, especially during cold or rainy seasons.

TREATMENT

There is no specific treatment for Swine Flu. It is highly important to cut down on the feed and provide warm, dry quarters for affected animals.

REMARKS

Lungworm larvae may harbor the virus which produces Swine Flu. Earthworms are the intermediate host of the lungworm and, for this reason, may be a source of infection. The bacterium (*Hemophilus suis*) can persist in the respiratory tract for several months without producing the disease, in the absence of the virus.

normal and show no evidence of sickness before the fourth day after contracting the disease. This explains the reason for a large percentage of animals in infected herds appearing normal although they are actually infected with the disease, and even if treated some may die as a result of the disease.

SYMPTOMS

Symptoms vary greatly in different animals, depending upon the virulence of the virus and the resistance of the animals. Usually, one or two apparently healthy animals in the herd are noticeably off feed, and within a few days quite a number of animals in the herd refuse to eat. The temperature is an important diagnostic aid. The temperatures of animals affected with the disease may vary between 104 and 108°. As the disease progresses, the animals become weak, develop a wobbly gait, difficult breathing, the eyes become red and watery, and later gum up. Constipation may be present in the early stages, but a diarrhea usually develops in the later stages. In the very acute form of the disease, animals that are apparently normal may be found dead without having manifested any symptoms of illness, other than being off feed. In the less acute form, the disease may run a course of 10 to 15 days or longer, the animals becoming progressively weaker. Usually, it is not possible to make a definite diagnosis of Hog Cholera on the basis of symptoms alone. The history and post-mortem findings and, frequently, laboratory examinations, together with animal inoculation tests, are necessary before a positive diagnosis can be made.

POST-MORTEM LESIONS

On postmortem examination of animals affected with uncomplicated Hog Cholera, petechial hemorrhages (small, bright red, pin-point spots) are usually observed on the kidneys, in the bladder, frequently on the lungs and in the lymph glands. Otherwise, all tissues and organs appear perfectly normal. When Cholera is complicated with other diseases, many other tissue changes will be found associated with the petechial hemorrhages, such as pneumonia, large hemorrhages and small ulcers in the intestines, etc.

PREVENTION

Hog Cholera can be prevented in susceptible animals by the Simultaneous Method of vaccination with Anti-Hog-Cholera Serum and Hog-Cholera Virus or by vaccination with

Hog Cholera Vaccine (see Page 50). Under normal conditions, animals vaccinated with Serum and Virus produce a fast, active and usually lasting immunity against the disease. Vaccination is the only recognized effective method for the prevention and control of this disease. Swine of any age may be vaccinated. The ideal age to vaccinate, however, is a week or two before weaning time, unless Cholera is present on the premises or in the neighborhood, and there is immediate danger of the pigs contracting the disease, in which case, all animals should be vaccinated immediately by the Simultaneous Method, regardless of age.

REMARKS

Animals vaccinated with Serum and Virus should be kept separate from non-vaccinated animals for a period of 21 days, as some animals may contaminate the premises with Virus in their body discharges. Animals may be slaughtered for food purposes after this time.

The minimum dosage of Anti-Hog-Cholera Serum and Hog Cholera Virus for simultaneous vaccination are as follows:

ANTI-HOG-CHOLERA SERUM

Sucking pigs	16 to 20 c.c.
20 to 30-lb. pigs	24 c.c.
30 to 40-lb. pigs	24 to 28 c.c.
40 to 60-lb. pigs	28 to 32 c.c.
60 to 80-lb. pigs	32 to 36 c.c.
80 to 100-lb. pigs	36 to 40 c.c.
100 to 120-lb. pigs	40 to 48 c.c.
120 to 150-lb. hogs	48 to 56 c.c.
150 to 180-lb. hogs	56 to 64 c.c.

Hogs weighing over 180 lbs. add 2 c.c. for each 10 lbs. weight. The dose of serum for thin hogs should be based on what they would weigh if normal. If the condition of the pigs or surroundings is not favorable, the above dosage must be increased accordingly.

HOG-CHOLERA VIRUS

Pigs up to 60-lbs.....	2 c.c.
60 to 100-lbs.....	3 c.c.
Over 100-lbs.	4 c.c.

It must be remembered that few herds on the American farm meet the requirements justifying the minimum dosage. It is better to use a large dose and be safe. If too little Virus is given, the immunity may not be permanent. Exposure to the conditions of shipping, trucking, and public stockyards usually reduces the vitality of the animals.

For these reasons, we never advise the use of minimum dosages under ordinary field conditions. Our recommended doses for field vaccination are as follows:

Hog-Cholera-Virus—3 to 5 c.c. regardless of weight or age.

Anti-Hog-Cholera Serum—25 to 50% above the minimum dosage.

All Globe Anti-Hog-Cholera Serum is produced in accordance with rules and regulations issued by the Bureau of Animal Industry, and passes rigid pig tests for potency and purity under government supervision. It must be remembered that Anti-Hog-Cholera Serum and Hog-Cholera Virus are essentially a preventive and not a cure. Hence the importance of vaccinating the pigs before they become infected with Hog Cholera.

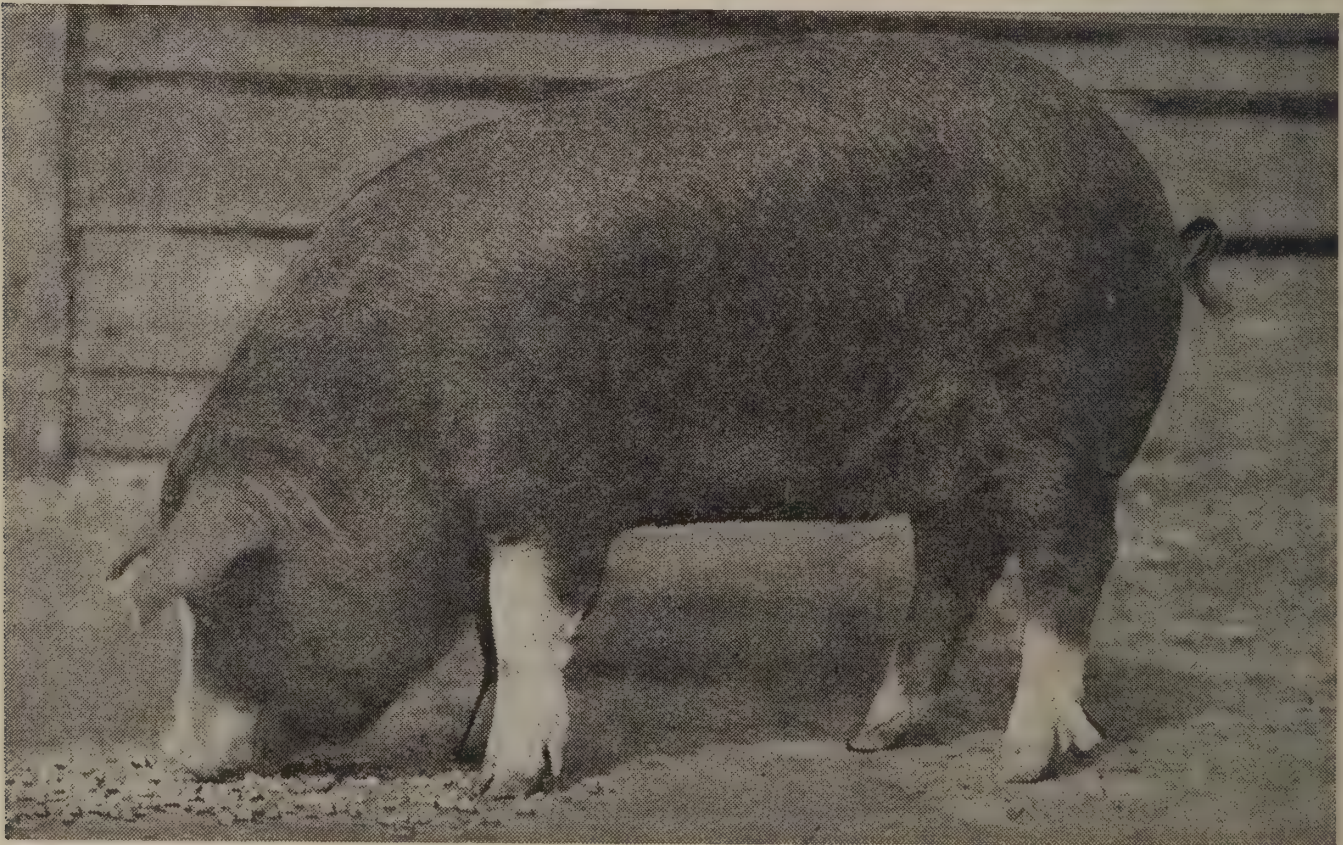
POST VACCINATION TROUBLES

The presence of bacterial infections, internal parasites or other contributing factors, such as lowered resistance following shipping, are the most frequent causes of "breaks" following simultaneous vaccination. The process of building up immunity results in a somewhat lowered resistance in the animals for about two weeks following vaccination. During this period, they are more susceptible to other in-

fections, and mild diseases which pigs are normally able to overcome become active.

Pigs that apparently have been satisfactorily immunized against Hog Cholera have been known to lose their immunity temporarily in the presence of some other acute disease. During this period of lowered immunity, animals may again become susceptible to Hog Cholera and a post-mortem examination, at this time, may reveal lesions of Hog Cholera, in addition to those of the disease that was primarily responsible for the sickness in the animal. Upon recovery from the primary disease, the immunity to Hog Cholera may again be re-established. In the simultaneous vaccination of swine, it must be remembered that 100% healthy pigs, plus 100% serum and virus, plus 100% dosage—equals 100% results.

All available evidence seems to indicate that irregular results following vaccination point to the fact that the condition of the herd at the time of treatment is a much greater factor than variation in potency of serum and virulence of virus. So-called breaks have been observed where serum of the highest potency and virus of the highest virulence were properly administered in the proper dosage, and later the herd developed Hog Cholera or a condition impossible to differentiate from this disease. Regardless of the brand of serum and virus used, and the fact that proper dosage and



methods of administration were used, a very small percentage of these so-called breaks occur annually; therefore, many times when these so-called breaks occur, the serum and virus used are unjustly criticized and condemned, as well as the methods of administration.

Hog Cholera, the most destructive disease of swine, is an ever-increasing menace to the swine industry. Hogs are now more important than ever before. America must protect this vitally needed supply of food. Vaccinate now with Globe Anti-Hog-Cholera Serum and Globe Hog-Cholera Virus—both produced and tested under the supervision of the U. S. Government. Every serial of Globe Serum and Virus is tested on live pigs for purity and potency before being released for sale.

GLOBE ANTI-HOG-CHOLERA SERUM

For use in the prevention and treatment of Hog Cholera. For fast and usually lasting immunity, both Anti-Hog-Cholera Serum and Hog-Cholera Virus must be used simultaneously.

CODE WORD:

- 500-c.c. BottleCLERFUL
- 250-c.c. BottleCLERSER
- 100-c.c. BottleCLERCO

GLOBE HOG-CHOLERA VIRUS

For use in conjunction with Globe Anti-Hog-Cholera Serum for the development of a fast and lasting immunity against Hog Cholera.

CODE WORD:

- 100-c.c. BottleVFUL
- 60-c.c. BottleVMOT
- 30-c.c. BottleVTAM
- 15-c.c. BottleVIRSE



IMMUNIZATION WITH HOG CHOLERA VACCINE

Hog Cholera Vaccine is the most recent development in the field of Hog Cholera immunization. Years of experimental work and data compiled from field use on thousands of pigs clearly demonstrate that this product can be depended upon to produce a substantial immunity to the disease Hog Cholera.

Hog Cholera Vaccine does not replace the older method of vaccination with Serum and Virus, for each method has its own field of greatest usefulness.

The outstanding advantages of Hog Cholera Vaccine are

- (1) The product contains no living virus and, therefore, cannot produce hog cholera, cannot infect the premises, cannot cause a flare up of a latent infection, causes no severe vaccination "setback" or stunting, and will not in itself injure pigs that are wormy or suffering from malnutrition or other abnormalities. It must be remembered, however, that such pigs may be incapable of developing the same degree of resistance as would normal healthy pigs.
- (2) When desired, any portion of the herd may be vaccinated without endangering the balance of the herd.
- (3) Hog Cholera Vaccine is easy to use because only the one product is required and the dose is small and constant—5 c.c. per animal regardless of age or weight.

PRECAUTIONS

Most biological products have their limitations and this is true of Hog Cholera Vaccine. The limitations of this product stem from three of its basic characteristics.

- (1) Three weeks must elapse following vaccination before a full protective degree of immunity is established. This means that Hog Cholera Vaccine should not be used during an outbreak, nor should it be used to vaccinate pigs that have been exposed or may be exposed to Hog Cholera within 3 weeks after vaccination.
- (2) A passive immunity interferes with or nullifies the action of the vaccine. Passive immunity may be acquired by suckling pigs thru the milk of immune sows, or may be produced by giving a dose of Anti-Hog-Cholera Serum. For this

reason, pigs should be weaned at least 2 weeks before vaccination with Hog Cholera Vaccine. Anti-Hog-Cholera Serum should never be used with Hog Cholera Vaccine. The effect would be the same as giving serum alone—a short period of protection. Furthermore, the administration of Anti-Hog-Cholera Serum at any time within 4 weeks before or three weeks after vaccination with Hog Cholera Vaccine would likewise render the vaccine ineffective.

- (3) The duration of immunity following vaccination of normal healthy pigs, according to label directions, with a single dose of Hog Cholera Vaccine is in most instances at least 12 months. A single dose will usually suffice to protect animals until they reach market weight. Those retained as breeders should be revaccinated at this time and once each year thereafter.

From what has been stated above, it is apparent that Hog Cholera Vaccine finds its widest field of application in closed farm herds when there is no cholera in the immediate locality and when the owner desires some protection against Hog Cholera without accepting the risks entailed in the use of serum and virus.

Hog Cholera Vaccine is not recommended for immunizing animals that are to be admitted immediately to garbage feed lots where early exposure to cholera is almost certain, nor for use on animals purchased at public stock yards or auction sales where the history of the animals is uncertain. In these instances, the Simultaneous Method of vaccination with Serum and Virus is to be preferred.

ADMINISTRATION OF HOG CHOLERA VACCINE

Shake the bottle just before filling the syringe. Use a sterile syringe and needle. Inject 5 c.c. of vaccine under the skin of the foreleg after disinfecting the site of inoculation. A 16-gauge 1-inch needle is preferred in order to lessen the chance of leakage.

GLOBE HOG CHOLERA VACCINE

Code Word:

20-Dose Package (100 c.c.) . . . KOLBIG
12-Dose Package (60 c.c.) . . . KOLDOZ
6-Dose Package (30 c.c.) . . . KOLSIX
3-Dose Package (15 c.c.) . . . KOLWEE

INTERNAL PARASITES OF SWINE

There is a wide variety of parasites that infest swine, producing unthriftiness and rendering them more susceptible to disease.

Heavy parasitic infestations cause diarrhea; loss in weight; rough, dull coat, and in some cases the death of the animal. The greatest losses occur in young pigs.

ASCARIDS

These large roundworms are yellowish or pink in color and are usually from 3 to 8 inches in length. The mature worms live in the small intestines where they produce considerable irritation, diarrhea, and retarded growth in spite of a ravenous appetite. The ascarid larvae migrate through the liver and lungs of swine before reaching maturity. Whitish scars on the liver and lesions of pneumonia in the lungs may be the result of these larvae.

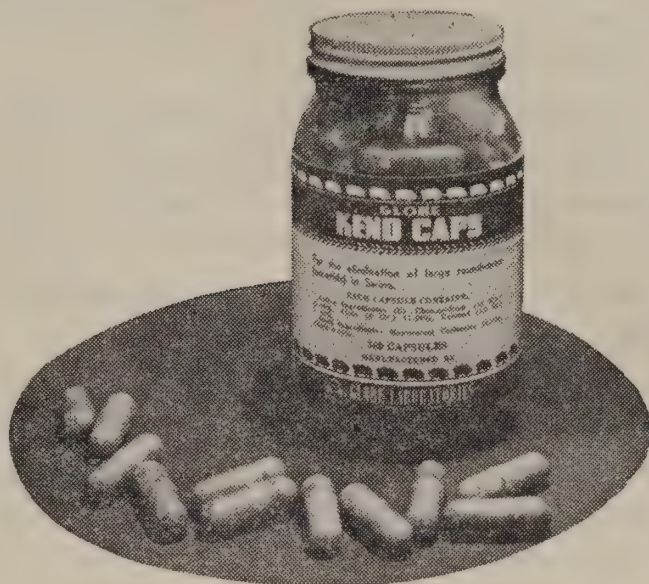
You cannot afford to feed wormy hogs, for these animals do not gain weight as they should and thus they waste too much feed. Worms reduce the vitality and resistance of your hogs, making them more susceptible to any disease of swine to which they may be exposed. Globe Keno Caps contain Oil of Chenopodium, which is recognized by most veterinarians as one of the most effective drugs for removal of large Roundworms (Ascarids) in hogs.

For the removal of ascarids from the intestines of swine, fast animals 18 to 24 hours and then administer one Keno Cap for pigs weighing 40 to 80 pounds. Over 80 pounds, two capsules. Administer with a balling gun and withhold feed and water for 3 hours after treatment.

Caution: Use only as directed.

Globe Phenothiazine (Drench Grade) mixed with the feed, as described under Nodular Worms, is also partially effective for Ascarids.

GLOBE KENO CAPS



CODE WORD:

100 Capsules **KEKAP**

Jaw Spreader and Keno Balling Gun, See Page 103.

THORN-HEADED WORMS

White in color and about the same size as the ascarids. These worms attach themselves to the walls of the intestine by means of a spiny snout.

The immature thorn-headed worms live in the larvae of June bugs (white grubs) which pigs eat while rooting in the ground. In the pig's stomach, digestion of the grub releases the thorn-headed worms which migrate to the small intestine where they attach to the wall and grow to maturity.

There is no recognized effective treatment for this parasite; it may be controlled by sanitation and ringing the noses of pigs to keep them from rooting.

NODULAR WORMS

There are three species of nodular worms commonly found in swine. The larvae of these worms are picked up by swine while eating contaminated feed. Upon reaching the large intestines, these larvae burrow into the intestinal wall, causing characteristic nodules, passing back into the intestines where they develop into maturity.

Farmers Bulletin 1787 states that "when given to swine in adequate dosages, one treat-

ment with Phenothiazine will remove more than 90% of all the nodular worms present in the treated animals."

Phenothiazine is now being extensively used for the removal of Nodular Worms. It is also partially effective for the removal of large Roundworms (Ascarids) in hogs. It is usually administered in the feed, using dry mash or slop.

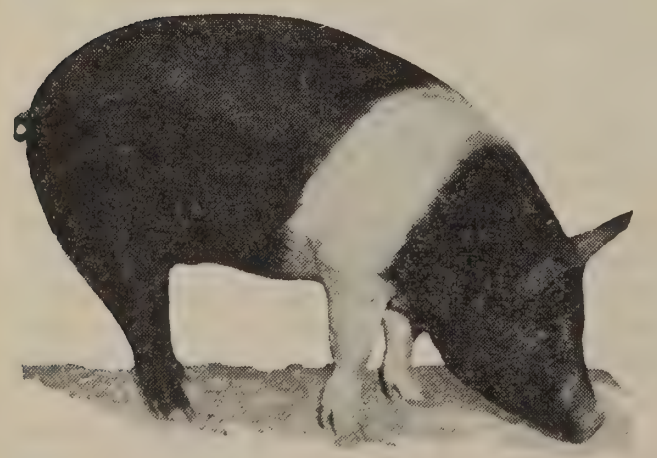
Globe Phenothiazine (Drench Grade) contains Bentonite, to make easy the mixture of Phenothiazine into a suspension with water. Phenothiazine powder alone is not soluble and does not mix well with water.

DOSAGE TABLE FOR SWINE

Body Weight	Dose per Animal		Amount to Treat 100 Head
15- 25 lbs.	5 grams (1	level Tbsp.)	1½ lb.
25- 50 lbs.	8 grams (1½	level Tbsp.)	1¾ lb.
50-100 lbs.	12 grams (2½	level Tbsp.)	2¾ lbs.
100-200 lbs.	20 grams (4	level Tbsp.)	4½ lbs.
Over 200 lbs.	30 grams (6	level Tbsp.)	6⅞ lbs.

Thoroughly mix dose with the usual feed.

GLOBE PHENOTHIAZINE (Drench Grade). See Page 62.



NECROTIC ENTERITIS

(Necro, Infectious Gastroenteritis, Pig Typhus, Salmonellosis)

Necrotic Enteritis is a disease primarily of young growing pigs up to six months of age, but under certain conditions, it may attack older hogs. The outstanding lesion in this disease is an inflammation of the intestine (enteritis) leading to the development of areas of "necrotic" or dead tissue in the lining of the intestines—hence the name Necrotic Enteritis, or "Necro," as it is often called. Each year this disease causes wide-spread losses, second only to those resulting from Hog Cholera. Necrotic Enteritis is frequently a complication of Hog Cholera and, when present in the herd in a latent form at the time of vaccination with Anti-Hog-Cholera Serum and Hog-Cholera Virus, it may be responsible for serious losses.

CAUSE

Until comparatively recent years, the evidence indicated that Necrotic Enteritis was caused entirely by a specific bacterium, *Salmonella choleraesuis*. It now appears, as a result of recent scientific reports, that the cause or causes of "Necro" are more complex than was originally believed, and that a complete understanding of all the factors involved must await the results of future investigations. It has been determined that pigs on a ration deficient in Niacin (Nicotinic Acid, one of the Vitamin B complex) develop a disorder called Pig Pellagra which bears a close resemblance to Necrotic Enteritis. Furthermore, niacin-deficient pigs appear to have a lowered resistance to intestinal infections with the result that many cases diagnosed as "Necro" represent a combination of *Salmonella* infection and Niacin deficiency. Some forms of diarrhea and intestinal inflammation are undoubtedly due to causes not known at the present time.

SYMPTOMS

Pigs affected with Necrotic Enteritis usually have a watery diarrhea. The appetite for both food and water is diminished. As a result of these debilitating influences, there is rapid loss of weight, general weakness, tucked-up appearance, rough coat and dry wrinkled skin. The temperature may be high at the onset, returning to normal in a few days as the condition improves or becomes chronic. The chronic form of the disease leads to stunting of young animals which makes them unprofitable. The

death loss varies considerably in outbreaks and may be high. The outbreak may start as a relatively mild infection in young pigs only, but after passage from pig to pig, the virulence of the organisms becomes enhanced to a point where older animals may be stricken. An extremely acute form of the disease, characterized by blood stream infection and rapid death, is sometimes seen in animals of all ages.

POST-MORTEM LESIONS

In typical cases the most characteristic lesions are found in the large intestine and cecum. When these organs are cut open, the wall appears thickened and the lining shows numerous necrotic areas, grayish or yellowish in color. Sometimes the entire lining is necrotic and beginning to slough. The inner surface of the stomach frequently shows intense inflammation and ulceration. Animals that have been affected for a long time may show evidence of a secondary pneumonia.

In the acute form of the disease with blood stream infection, somewhat different lesions are seen at autopsy. The necrotic patches in death loss varies considerably in outbreaks and the intestines may be absent, but in their place are seen numerous hemorrhages throughout the lining of the intestine. Pin-Point hemorrhages may also be seen on the heart, lungs, kidneys, and other organs. The spleen is enlarged, dark purplish in color, and very soft.

PREVENTION

Cleanliness, sanitation, and good care, feed and management are of the utmost importance in preventing Necrotic Enteritis. Since young pigs are most susceptible, it is advisable to have sows farrow in special pens or houses that can be easily cleaned and disinfected. Sows, just before admission to the farrowing pens, should be thoroughly washed with soap and warm water and their udders should be disinfected. Newly purchased animals should be held in isolation for three weeks after which time they may safely be admitted to the herd, if still in good health.

The addition of Globe Glo-N-6 Powder (which contains Niacin) to the feed according to label directions, will furnish an adequate intake of this essential vitamin and prevent the occurrence of Niacin deficiency. Vaccination with bacterins may help prevent the condition when due to the organisms listed in the formula.

TREATMENT

There is no specific treatment or sure cure for Necrotic Enteritis. At the first indication of an outbreak, isolate all visibly sick animals and, if possible, move the non-affected animals to clean pens. Intraperitoneal injections of Globe Sulfa-Solution may give beneficial results in those cases caused by or complicated with Sulfa-susceptible organisms. The dose is $\frac{1}{4}$ c.c. per pound body weight every 12 hours for 3 or 4 days. In any form of scours in pigs, it is advisable to provide a ration that is bulky, not too rich, and not irritating to the digestive tract. Whole oats are especially suited for this purpose after soaking in a solution of Globe Alkaline Powder to soften the hulls and to make the oats more palatable. When a Niacin deficiency may be a contributing factor, it is suggested that Glo-N-6 Powder be added to the ration in order to assure an adequate intake of this vitamin. Mix one pound of Glo-N-6 Powder with each 100 pounds of feed.

Convalescent animals with lagging appetites may be benefited by the use of Globe Hog Tonic Powder in the feed.

GLOBE SALMONELLA CHOLERASUIS BACTERIN (WHOLE CULTURE) ALUM TREATED

CODE WORD:

250-c.c. Package	SALBAK
125-c.c. Package	SALKOL
50-c.c. Package	SALMUN

GLOBE SULFA-SOLUTION See Page 22

GLOBE ALKALINE POWDER

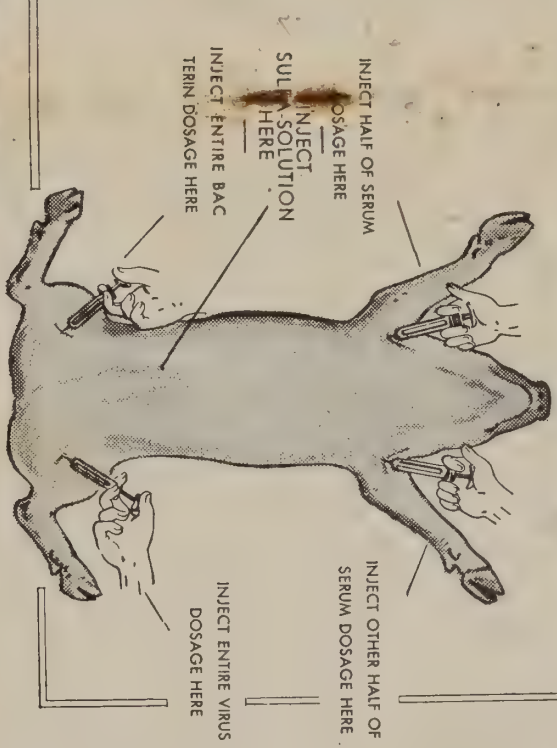
CODE WORD:

8 Pounds	ALKFUL
4 Pounds	ALKMED
2 Pounds	ALKY



SWINE INJECTION DIAGRAM

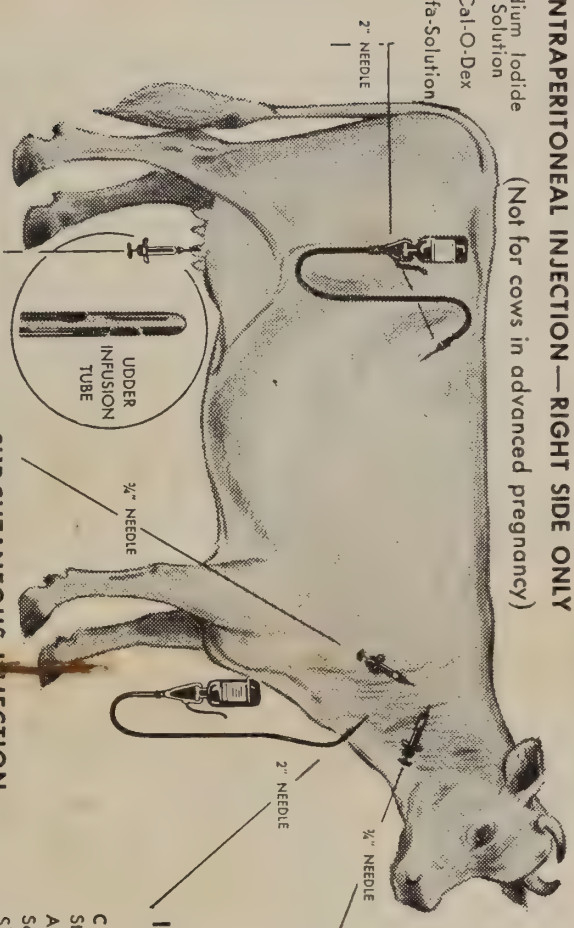
Average farm conditions seldom justify the use of a minimum dose of Anti-Hog Cholera Serum. It is safer to use a larger dose of serum. Recommended doses for field vaccination: Anti-Hog Cholera Serum: 25% to 50% above the minimum dosage. Hog Cholera Virus: 3 to 5 cc, regardless of age or weight.



CATTLE INJECTION DIAGRAM

INTRAPERITONEAL INJECTION—RIGHT SIDE ONLY
(Not for cows in advanced pregnancy)

Sodium Iodide Solution
Cal-O-Dex
Sulfa-Solution



UGGER INFUSION
Sulfa-Mastol
Penicillin

SUBCUTANEOUS INJECTION—UNDER THE SKIN
Blackleg Bacterin Whole Culture (Alum Treated)
Clostridium-Chauvei-Septicus Bacterin
Brucella Abortus Vaccine
Anti-Hemorrhagic-Septicemia Serum

INTRAMUSCULAR INJECTION—DEEP INTO THE MUSCLE

Mixed Bacterins
Hemorrhagic-Septicemia Bacterin
Corynebacterium-Pasteurella Bacterin (Whole Culture)
Blackleg Bacterin Whole Culture
Anti-Hemorrhagic-Septicemia Serum
Campioil
Sterile Glucose Solution
Sodium Cacodylate Solution
Glo-Bestrol
Penicillin

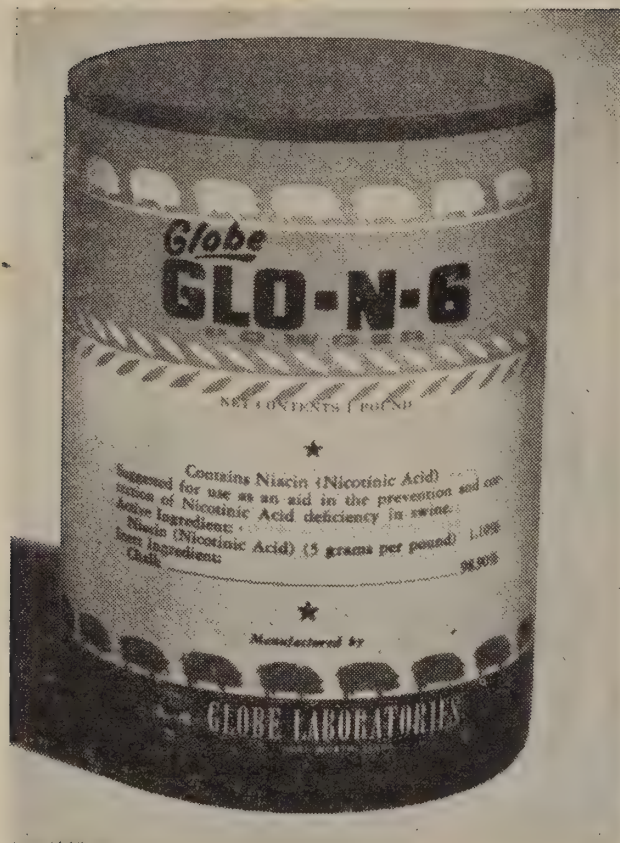
INTRAVENOUS INJECTION—JUGULAR VEIN

Cal-O-Dex
Sterile Glucose Solution
Anti-Hemorrhagic-Septicemia Serum
Sodium Cacodylate Solution
Sulfa-Solution
Sodium Iodide Solution

GLOBE LABORATORIES

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Kansas City • Denver • Little Rock • Memphis
Atlanta, Calif. • Sioux City • Calgary, Can.

GLOBE GLO-N-6 POWDER



CODE WORD:

100 Pounds
1 PoundGLOPO

GLOBE HOG TONIC POWDER

CODE WORD:

100 PoundsHOTFUL
50 PoundsHOTOL
25 PoundsHOXXV
10 PoundsHOTEX
5 PoundsHOTIV
1 PoundHOT

GLOBE MIXED BACTERIN (PORCINE)

FORMULA 1 (Whole Culture)

Formula: 30% *Pasteurella suisepitica*, 30% *Salmonella choleraesuis*, 20% *Streptococcus (pyogenic)*, 20% *Corynebacterium pseudodiphthericum*.

A suggested aid in the prevention of those conditions due to the type and species of organisms mentioned in the formula, which were obtained from the tissues of swine, in conjunction with such other adequate measures as may be indicated, such as isolation of all affected animals from the herd, strict cleanliness and sanitation, suitable housing facilities, proper feeds and feeding methods, mineral supplements and vitamins as needed, etc.

Dose: For prevention—Hogs and pigs in non-affected herds, 5 c.c., injected into the muscle. Healthy animals in affected herds, 10 c.c. per animal repeated at 48-hour intervals as needed.

CODE WORD:

250-c.c. PackageSUPEST
125-c.c. PackageSERDOS
50-c.c. PackageSUERO

GLOBE MIXED BACTERIN (PORCINE) FORMULA 2

Suggested for use as an aid in preventing those conditions attributed to the organisms listed in the formula which were isolated from the tissues of swine.

CODE WORD:

125-c.c. PackageENFUL
50-c.c. PackageENSWI

SYMPTOM TABLE

ARE THEY AFFECTED WITH HOG CHOLERA, SWINE ERYSIPELAS, OR INFECTIOUS GASTROENTERITIS?

<i>Examine These Organs:</i>	<i>Acute Hog Cholera</i>	<i>Acute Swine Erysipelas</i>	<i>Acute Infectious Gastroenteritis</i>
SKIN	Red spots or hemorrhages, do not disappear on pressure.	Scarlet areas—disappear on pressure; "diamond skin."	Normal or extensive purple discoloration of abdomen just before death.
EYES	Eyelids gummy.	Normal or clear watery discharge.	Normal.
LIMBS	Knuckle at pastern joints.	Hot, painful, and frequently swollen.	Normal.
EPIGLOTTIS	Small petechial hemorrhages	Normal.	Irregular size hemorrhages may be present.
LYMPH GLANDS	Bright red, enlarged, and congested at borders.	Little change in color but enlarged.	Enlarged, congested, purplish-black in color.
LUNGS	Real dark hemorrhages that do not run together are present.	Normal; may be scattered areas of congestion.	Usually scattered areas of congestion.
STOMACH	Membranes usually normal.	Contains some food; membranes frequently show patchy areas of congestion and heavy sticky mucus on surface.	Contains foul-smelling ingesta. Usually acute, diffuse inflammation.
SPLEEN	Normal or slight enlargement or discoloration along edges; dark.	Frequently normal; may show slight enlargement with reddish-purple discoloration.	Enlarged, friable, dark red or purplish-black in color.
LIVER	Normal or may be congested.	Usually normal.	Frequently enlarged and congested.
SMALL INTESTINES	Normal or slight congestion.	Frequently congested.	Usually congested; may show petechial hemorrhages on mucous membrane.
LARGE INTESTINE	Generally shows moderate congestion, especially in region of ileocecal valve.	Usually normal.	Usually diffuse congestion of mucous membrane over large area.
KIDNEY	Pin-point petechial hemorrhages.	Usually some inflammation present.	Soft and congested. Petechial hemorrhages, large and irregular in size.
BLADDER	Petechial hemorrhages or congestion of mucous membrane.	Usually normal or slight congestion.	Numerous hemorrhages, irregular in size; extensive diffuse congestion.

SHEEP SECTION

ENTEROTOXEMIA

Pulpy Kidney Disease—(overeating disease)

Enterotoxemia is a disease of lambs caused by the organism *Clostridium perfringens* Type D. This organism is normally present in the lower intestine of sheep and other animals and is widely distributed in the soil. When lambs have an abundance of highly nutritious feed, conditions may be altered in the intestine, thus permitting the organism to multiply rapidly and produce a powerful toxin or poison. This toxin is absorbed into the blood and is directly responsible for the disease.

Enterotoxemia may affect suckling lambs, older lambs on lush pasture and feeder lambs. Mature animals are seldom affected. In feed lots where lambs are being finished rapidly, the disease is especially serious, some outbreaks resulting in a 40% death loss in a few days.

SYMPTOMS

In acute attacks, lambs may die suddenly without showing any symptoms. When death does not occur immediately, such symptoms as marked weakness, walking in circles, leaning against objects, and throwing the head back may be noted.

In chronic cases there is scouring and loss of appetite. Prior to death the affected lamb may have convulsions or lie quietly in a coma.

POST-MORTEM LESIONS

The most constant finding is hemorrhages of various sizes on and in the heart. Less frequently, there may be hemorrhages in other organs, excessive fluid in the heart sac and dark pulpy kidneys. The kidney change develops several hours after death and is seen only when autopsy is delayed.

TREATMENT

In general, treatment of affected animals is not very successful, although there is some field evidence to indicate that large doses of antitoxin may be beneficial if administered in the early stages of the disease.

PREVENTION

Clostridium Perfringens Antitoxin, if available, may be used for immediate protection to stop further spread of an outbreak or to

protect animals during a short feeding period. The immunity conferred by antitoxin lasts only 2 or 3 weeks.

Clostridium Perfringens Type D Bacterin produces an immunity lasting several months in 90% or more of vaccinated animals. About 10 days are required for the development of a good immunity after vaccination with bacterin. For this reason, bacterin should always be administered at least 10 days before conditions are likely to be favorable for an outbreak. Vaccination of pregnant ewes with bacterin 4 to 8 weeks before lambing appears to provide some protection for their lambs during the suckling period.

EXTERNAL PARASITES OF SHEEP AND GOATS SHEEP SCAB (Mange)

There are four types of scab which affect sheep, but only two of these, Psoroptic (body scab) and Choriopic (foot scab), are considered to be of economic importance in this country at the present time.

Psoroptic or body scab is highly contagious, being transmitted easily by direct contact and spreading rapidly through the flock. The disease is caused by mange mites, tiny six-legged insects which are barely visible. The mites puncture the skin to obtain their food, and, in



this way, produce severe itching and inflammation. Affected sheep become restless and unthrifty. They rub and scratch the affected areas. The wool becomes matted, loose, and falls out, exposing patches of skin that are thickened, hardened, and sometimes cracked as a result of the prolonged irritation. The debilitating effects of Sheep Scab are pronounced, leading sometimes to serious death losses, especially under adverse weather conditions, or when complicated by other diseases.

In foot scab, the lesions are limited to the feet and legs.

TREATMENT

Lime-Sulfur and Nicotine are the dips officially recognized for treatment. The Government has for years been working successfully toward the eradication of Sheep Scab. For this reason, outbreaks should be reported immediately to the State Livestock Officials.

PREVENTION

Newly purchased animals should be held in quarantine pens for a week or 10 days before adding to a flock in order to make a careful examination for the presence of sheep scab, or any other contagious disease.

GOAT LICE

Lice are probably the most important and serious external parasites of goats, and yet are the easiest to control and eradicate. The blue lice pierce the skin and suck blood, whereas the biting lice live by feeding on the scales of the skin.

Animals that are infested with lice are restless, unthrifty, and lose weight. The hair becomes matted and, in severe cases, falls out. Infested animals may rapidly spread the infestation to non-infested animals and flocks, particularly during the winter season when animals are closely confined.

SYMPTOMS

Lice may be seen on the skin of infested animals; however, the very young lice are not easy to detect. Severe infestation causes animals to scratch or rub against objects which may result in open wounds. All new animals should be carefully examined for the presence of lice.

TREATMENT

Globe Glo-Cide 25, containing 25% DDT has proven very satisfactory in the treatment of goats infested with lice. Dilute Globe Glo-Cide 25 with water to make a two-tenths per

cent DDT Emulsion and use as a dip. Skin and hair must be thoroughly wet, and treatment should be repeated whenever necessary. Animals should not be dipped in the cold weather, and, for this reason, Globe A-D-A Lice Powder is the product of choice when weather conditions are not favorable and for individual treatment of a few animals. Dust the powder well into the coat and rub into the skin all over the body. Repeat at weekly intervals until three applications have been made.

GLOBE GLO-CIDE 25, See Page 26.

GLOBE A-D-A LICE POWDER, See Page 101.

SHEEP TICKS (Sheep Keds)

The so-called "sheep tick," a small brown insect, is in reality not a true tick at all, but a wingless fly, which lives in the fleece of sheep, punctures the skin and sucks the blood, moving about in the fleece to different areas. Each time the skin is punctured, additional irritation and itching occurs, thus causing the animals to become restless and to bite or rub themselves.

Sheep ticks may spread rapidly, especially during the cold weather when sheep are held in close quarters.

Pastures and corrals that have been used by infested sheep should be allowed to lie idle for at least two months before non-infested sheep are admitted.

SYMPTOMS

Sheep that are heavily infested with ticks are restless, unthrifty, off feed, resulting in loss of weight, and may attempt to bite or scratch themselves due to the intense itching and irritation. The ticks are easily found by making a careful examination of the fleece.

TREATMENT

Globe Glo-Cide 25 diluted with water to make a two-tenths per cent DDT Emulsion may be used for dipping tick-infested sheep. It is highly important that the fleece and skin be wet thoroughly. A single treatment should be sufficient, if thorough.

During the cold wet season, when dipping is not practical, application of Globe A-D-A Lice Powder (a rotenone preparation) is recommended as an effective aid in the control

of sheep ticks (sheep keds). Care should be taken to see that the powder comes in contact with the skin.

GLOBE GLO-CIDE 25, See Page 26

GLOBE A-D-A LICE POWDER, See Page 101.

GLOBE GLO-DANE 45
See Page 27

regarding application of this product in the control of external parasites of sheep and goats.

SHEEP NASAL FLY **(Grub in the Head)**

Sheep grubs are the larvae of the sheep bot-fly (*Oestrus ovis*). This fly deposits its larvae in the nostrils of sheep and from here they migrate into the nasal cavities.

During fly season (late summer and early fall), sheep may be seen running with their noses to the ground and showing other signs of restlessness.

Animals affected with grubs in the head, appear unthrifty and fail to gain weight. The presence of the larvae is extremely irritating, and causes a mucous discharge from the nose.

There is no practical treatment for grub infestations. The employment of such preventive measures as are available is recommended. Smearing Globe Fly Repellent and Wound Dressing or Pine Tar on the nose of the sheep, every few days during the fly season, may help in preventing the flies from depositing their larvae in the nose region.

GLOBE FLY REPELLENT AND
WOUND DRESSING, See Page 30

FOOT ROT

Foot Rot is an infection of the hoof and the soft tissues underlying the hoof. It occurs in both sheep and cattle. A fungus, known as *Actinomyces necrophorus*, is generally considered to be the most common causative agent, but other organisms are sometimes present in the Foot Rot either as primary or secondary infections. The disease occurs most commonly in crowded lots, especially those that are muddy, and in wet boggy pastures.

SYMPTOMS

Redness and swelling of the skin above the hoof and between the toes are the earliest

symptoms of Foot Rot, but, as a rule, the disease is not discovered until some of the affected animals become lame. The condition is extremely painful and when all four feet are involved, the animal may be unable to stand. As the infection spreads under the hoof, there is a separation of the hoof from the soft tissues underneath, and a grayish-yellow pus oozes from the affected parts. Foot Rot is accompanied by a characteristic offensive odor.

PREVENTION

Prohibit the addition of infected animals to clean flocks and herds. It is a good plan to hold newly purchased animals in isolation for at least one month, after which time, they may safely be released if no symptoms of the disease have been noted.

Corrals, feedlots, shelters, and pieces of equipment that have been used by infected animals should be thoroughly cleaned and disinfected. Manure and other refuse should be gathered and burned.

In so far as possible, keep animals on dry ground.

TREATMENT

Most cases of Foot Rot can be cured by proper treatment. The affected feet should be trimmed, removing loose portions of the hoof which have become undermined by the infection. If the disease is discovered in the early stages, trimming may be unnecessary. Apply a suitable antiseptic all over the foot. When treating large groups of sheep, it is most economical to walk them through a shallow foot bath filled with a solution of Copper Sulfate (Bluestone) dissolved in water. The strength of the solution may be anywhere from 5% to 20% and the length of time the sheep are in the bath should be not less than one, nor more than five minutes. Strong solutions of Copper Sulfate are very irritating, consequently, the stronger the solution used, the shorter the exposure period. In some instances, one treatment may be sufficient, in others, 2 or more treatments at 2 to 4-day intervals are required.

HEMORRHAGIC SEPTICEMIA
(See Cattle Section, Page 31)

INTERNAL PARASITES **OF SHEEP**

The worm parasites of sheep are essentially the same as those which affect cattle. Sheep,

however, are much more sensitive than cattle to the effects of these parasites, and it is for this reason that sheep and lambs frequently die from worm infestation, whereas calves usually survive, but may be weak, anemic, stunted, and unthrifty.

Of the many species of worms which inhabit the digestive tract of sheep, the stomach worms, hookworms, nodular worms, and tapeworms are among the most important. They are found practically everywhere that sheep are raised and are responsible for heavy losses through decreased weight, unthriftiness, and death.

The common liver fluke is a serious parasite in certain sections of the country. Experimental work indicates that 30 grams of Hexachlorethane, given in a drench mixture, is effective in removing the majority of adult flukes.

STOMACH WORMS, NODULAR WORMS and HOOK WORMS

These are undoubtedly the most widespread and most serious of all the sheep parasites. The life cycle of these worms is direct; that is, no intermediate host is required, and consequently, heavy pasture infestation may develop in a relatively short time under favorable conditions. Adult female worms lay countless numbers of eggs in the digestive tract of infested sheep. The eggs pass out with the droppings and, under suitable conditions of temperature and moisture, each egg soon hatches, releasing a tiny immature worm called a larva. These immature worms crawl up grass blades where they are readily eaten by sheep while grazing. Upon reaching the stomach or intestines, they continue their development reaching full size in about 3 weeks.

The Stomach Worms and Hook Worms are especially harmful because they are blood suckers. Nodular Worms, during a certain period of development, invade the wall of the large intestine, producing hard nodules which, if numerous, may interfere with normal functioning of the intestine, besides making it worthless as a packing house by-product.

Animals infested with Stomach Worms, Nodular Worms, and Hook Worms may exhibit the following symptoms—poor condition, weakness, anemia as indicated by pale lips and gums, diarrhea, “water belly,” and “bottle-jaw” (soft swelling under the jaw). A

definite diagnosis can be made by finding the worms on post-mortem examination. The Stomach Worms are found in the fourth stomach. Some of these are very small and not easily seen. The Hook Worms inhabit the small intestine and the Nodular Worms the large intestine and cecum.

TREATMENT

Copper Sulfate, Nicotine Sulfate, and Tetrachlorethylene have been used for many years to eliminate Stomach Worms from sheep and goats, but by far the best remedy from the standpoint of safety, efficacy, and ease of administration is Phenothiazine, which is highly effective for Stomach Worms, Nodular Worms, and Hook Worms. It is available as a drench (Globe Phen-Ovine), a powder (Globe Phenothiazine Drench Grade) that can be mixed with feed, and as boluses (Globe Phenothiazine Boluses 12½ grams). Individual treatment with Phen-Ovine or Phenothiazine Boluses is the best procedure because the dosage can be controlled very accurately.

The frequency with which treatment is required will depend on the rapidity of reinfestation and this, of course, varies directly with the amount of pasture infestation present. On heavily infested pastures, it may be necessary to treat sheep and lambs every 3 or 4 weeks throughout the warm season. On pastures with only slight infestation, 2 or 3 treatments per year may suffice.

The use of a Phenothiazine salt mixture (one part Phenothiazine—9 parts salt by weight), fed continuously to sheep and goats, is of value in decreasing pasture infestation and, subsequently, the degree of infestation in sheep and goats running on these pastures. Sheep and goats which have access to Phenothiazine-salt mixture will not consume enough Phenothiazine to eliminate any significant number of worms from the digestive tract, but the small quantity which they consume is of value in killing the young larva which hatch from worm eggs in the droppings.

Individual treatment, as often as necessary, combined with the continuous feeding of Phenothiazine-salt mixture, should aid materially in reducing worm infestation in succeeding years.

TAPE WORMS (*Moniezia*)

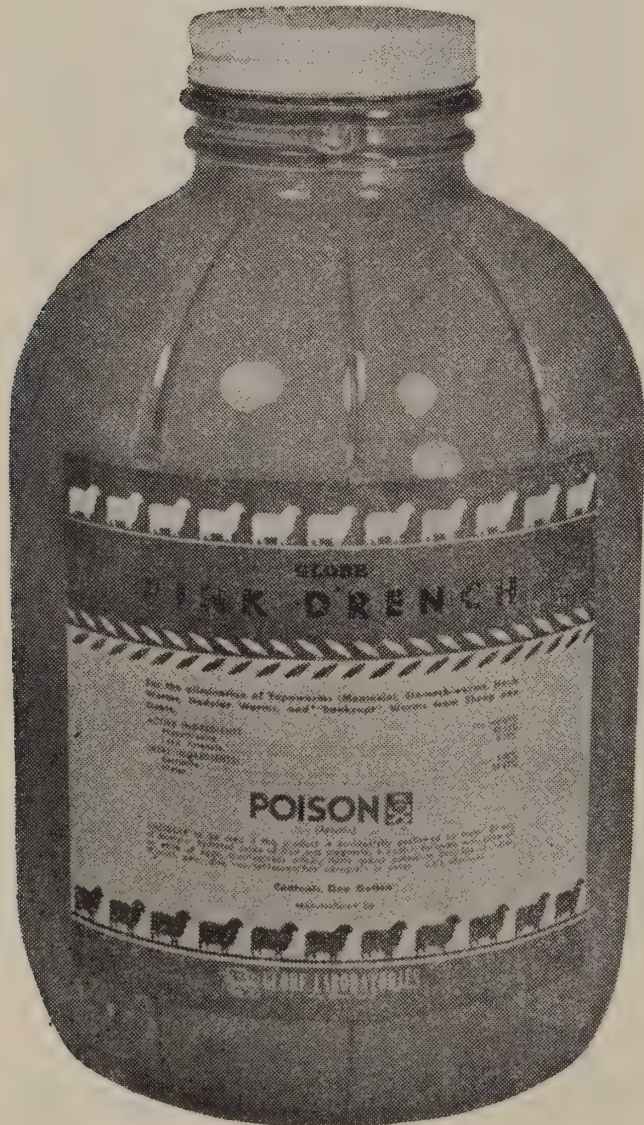
These are long flat segmented worms which

cause considerable losses in young growing lambs. In heavily infested animals, the most prominent symptoms are diarrhea and loss of weight, or failure to gain normally. Tapeworm segments, which appear like rice grains, may be seen in the droppings. On post-mortem examination, masses of tapeworms are found in the small intestine.

TREATMENT

Lead arsenate in suitable dosage has been found to be both safe and effective for removing *Moniezia* tapeworms from sheep and goats. Sheep and goats infested with tapeworms are nearly always infested also with Stomach Worms, or some of the other roundworms which are effectively removed by Phenothiazine. Globe Pink Drench combines the worming properties of both Phenothiazine and Lead Arsenate in order to give maximum benefit and should always be used when tapeworm infestation is suspected.

GLOBE PINK DRENCH



For the elimination of Tapeworms (*Moniezia*), Stomach Worms, Nodular Worms, Hook Worms, and "Bankrupt" Worms from sheep and goats.

Dose: Sheep and goats weighing over 50 lbs.—two ounces; Lambs and kids weighing 25 to 50 lbs.—one ounce. Administer with a dose syringe.

CODE WORD:
1 GallonPINKFEN

GLOBE TETRA SHEEP AND GOAT DRENCH

For the elimination of Stomach Worms, Hookworms, and some of the small intestinal worms (*Trichostrongyles*) from sheep and goats. Administer with 5 c.c. Tetra Syringe. Active Ingredient: Tetrachlorethylene.

CODE WORD:
1 GallonTETFUL
1/2 GallonTETMED
QuartTETRA
PintTET

GLOBE PHEN-OVINE



For Stomach Worms, Nodular Worms, and Hookworms in sheep, goats, and cattle. Each fluid ounce contains—Active Ingredient: Phenothiazine 12.5 grams.

CODE WORD:
GallonPHENOV
QuartPHEN

GLOBE PHENOTHIAZINE (DRENCH GRADE)—A POWDER

This powder may be mixed with the feed or used for making a drench. For the elimination of Stomach Worms, Nodular Worms, and Hookworms from sheep, goats, and cattle;

Strongyles from horses, and Nodular Worms from swine. Partially effective for the elimination of Large Roundworms (Ascarids) from swine.

CODE WORD:

- 5-Pound PackageFENOFIV
- 1-Pound PackageFENOPO
- 4-Ounce PackageFEN

GLOBE PHENOTHIAZINE
BOLUSES (12½ Grams)

For the elimination of Stomach Worms, Nodular Worms, and Hookworms from cattle, sheep, and goats, and Strongyles from horses. Open the mouth with a speculum and deposit the bolus far back in the mouth with a balling gun or by hand. Dipping the bolus in mineral oil will facilitate swallowing.

Dose: Sheep and Goats weighing over 50 pounds—2 boluses; Lambs and Kids weighing under 50 pounds—1 bolus.

CODE WORD:

- Box of 50.....FEEBO
- Speculum (jaw spreader) and balling gun,
See Page 103.

GLOBE NO. 1 TETRA
CAPSULES

For the elimination of Stomach Worms, Threadworms, and Hookworms from sheep and goats weighing over 40 pounds. Each capsule contains 5 c.c. Tetrachlorethylene.

CODE WORD:

- 100—5 c.c. Capsules.....CAPFUL

PINK EYE

Pink Eye in sheep and goats is usually a contagious disease, but may sometimes be caused by or associated with a deficiency of Vitamin A.

SYMPTOMS

At first, there is watering of the eyes, inflammation and swelling of the lids, and sensitivity to light. As the disease advances, the watery discharge changes to pus and the front part of the eyeball becomes whitish or cloudy, causing almost complete blindness. Under proper treatment at this stage or earlier, many animals will recover and regain their sight. If the disease is not treated, it may advance to ulceration and rupture of the eyeball, resulting in permanent blindness.

TREATMENT

Isolate affected animals and keep them in darkened quarters, or at least in a shaded area. Strong light is irritating to inflamed eyes. Apply Globe "Pink Eye" Prescription directly to the affected eyes at least twice daily until symptoms have subsided. If there is any question of Vitamin A deficiency, provide plenty of green feed or good quality alfalfa hay.

GLOBE PINK EYE PRESCRIPTION,
See Page 41

PREGNANCY DISEASE
(Lambing Paralysis)

This disease is the result of a toxemia occurring in ewes, usually making its appearance two to four weeks before lambing. Farm flocks are more often affected than range animals. The disease occurs chiefly in fat ewes carrying twins, or triplets, and the theory has been advanced by some authorities that a lack of exercise in confined animals is the exciting cause. If affected ewes deliver their lambs at the onset of this disease, recovery is rapid in the majority of cases.

Lambing paralysis may also occur in ewes in poor condition as a result of under-feeding.

SYMPTOMS

Usually the first symptoms noted are: Marked dullness, accompanied by slowness in movement. Animals may be observed leaning or pushing against a fence or building for support. These symptoms are followed in a few days by unsteady gait and partial paralysis affecting particularly the hindquarters. Animals that go down are unable to rise and soon pass into a comatose condition. Death usually occurs six to seven days after the onset of the disease.

POST-MORTEM FINDINGS

Lesions are confined principally to the liver, which has a yellowish, clay-colored appearance. Upon opening the uterus, twin or triplet lambs are usually found.

PREVENTION

In emaciated animals the frequency of this disease can be materially reduced by feeding liberal amounts of good quality hay, supplemented with a grain feeding once a day. If possible, these animals should have free access to pasture and, if necessary, forced exercise. In exceedingly fat ewes, the feed should be reduced the last month or six weeks of pregnancy, and the ewes should be forced to exercise.

TREATMENT

Affected animals should have a well balanced ration containing sufficient vitamins and minerals for normal development of the lambs. Daily injections of 40 to 50 c.c. of Sterile Glucose Solution or Cal-O-Dex may prove helpful if treatment is started before the animal goes down.

**GLOBE STERILE GLUCOSE
SOLUTION, See Page 16**

GLOBE CAL-O-DEX, See Page 40

SOREMOUTH (Contagious Ecthyma)

Soremouth (Contagious Ecthyma) is a contagious disease of lambs and kids caused by a filterable virus. Young animals are most susceptible. Only rarely is the disease seen in ani-

mals over one year of age. Soremouth is prevalent both in range areas and in feedlots, and causes serious losses to sheep growers and feeders every year. Affected lambs and kids develop sores on the lips, usually covered by brownish scabs, which may crack open or be rubbed off leaving a raw bleeding area. Due to soreness of the lips, affected lambs may refuse to suckle or eat, resulting in a loss of weight and a general physical setback, during the most critical growth period. Sores on the udders of nursing ewes may be a contributing factor in the development of "Bluebag," a form of Mastitis.

Since Soremouth usually occurs during warm weather when screwworm flies may be prevalent, the lips of affected lambs frequently become infested with screw worms. The open lesions are also subject to bacterial infection, making the condition even more serious.

SYMPTOMS

The first sign of Soremouth is the development of tiny blisters on the skin of the lips. As these blisters grow in size they become filled with pus, the pustules break open and finally a crust-like scab forms over the raw surface. If no complications develop, the scab dries up and falls off in about four weeks.

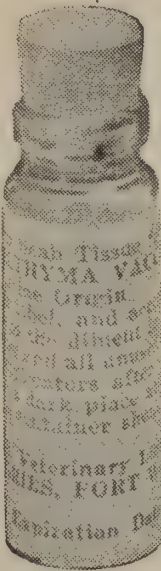
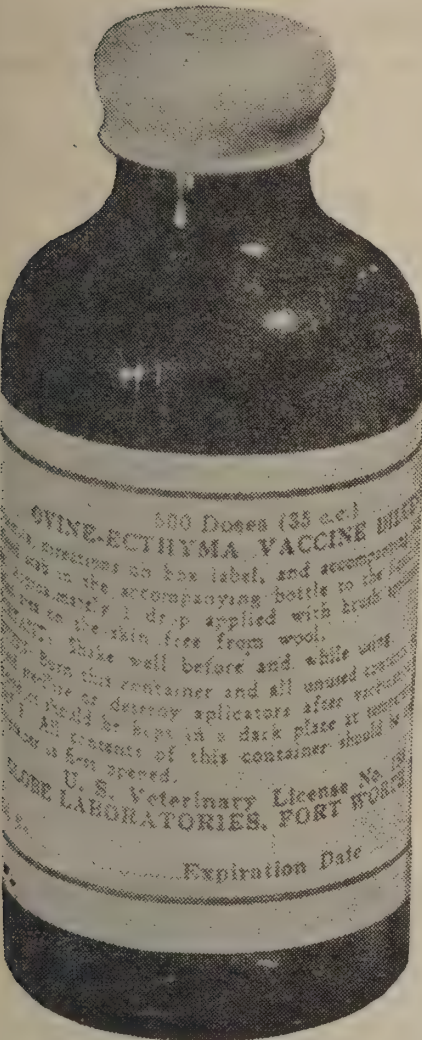
PREVENTION

Vaccination with Ovine-Ecthyma Vaccine is the only effective and positive means of preventing this disease. It is best to vaccinate lambs at marking, castrating, and docking time, although animals of all ages may be vaccinated at any time or season. Vaccinated animals develop a very high degree of protection against this disease, apparently lasting for the life of the animal.

TREATMENT

There is no specific medicinal treatment for this disease. Vaccination with Ovine-Ecthyma Vaccine may, in many cases, shorten the course and reduce the severity of the disease. External treatment consists of removing all scabs and painting the affected areas with an antiseptic and astringent solution, such as Globe Gall Lotion. In the prevention and control of screw worm infestations, the use of Globe Fly Repellent and Wound Dressing, or Globe U. S. Formula 62 is recommended.

GLOBE OVINE-ECTHYMA VACCINE
(Ovine Origin)



CODE WORD:

500-Dose PackageEKFUL
100-Dose PackageEKTHA

GLOBE GALL LOTION, See Page 73

GLOBE FLY REPELLENT AND
WOUND DRESSING, See Page 30

GLOBE U. S. FORMULA No. 62,
See Page 30

PAINT (Sheep Marking)

Sheep-Marking Paint is available in black and red; provides easy and economical means of marking animals.

CODE WORD:

Gallon
Quart

CHALK

Used for temporary marking of sheep.
(Colors: red, blue.)

CODE WORD:

Box of 1 Gross.....

CRAYONS (OIL)

For marking sheep. Colors: red, blue, black, green, yellow.

CODE WORD:

Box of 1/2 Gross.....

STIFF LAMBS

The cause of "Stiff Lambs" or White Muscle Disease has not been definitely established. It is probably a result of some metabolic or nutritional defect. The disease is not contagious or infectious.

SYMPTOMS AND LESIONS

Lambs from 3 to 10 weeks of age appear to be most susceptible. Affected lambs show signs of stiffness, muscular tremors, weakness and finally inability to rise. The hind quarters are most generally affected. There is no fever, depression, or loss of appetite, but lambs may starve because unable to stand and suckle. On post-mortem examination, some of the muscles show a peculiar degeneration characterized by the presence of numerous narrow white lines or sometimes white patches.

TREATMENT

Experimental work indicates that treatment with Wheat Germ Oil is very effective when started soon after symptoms appear. The recommended dose of Wheat Germ Oil is 10 c.c. Add the oil to about 2 ounces of milk, shake vigorously, and give as a drench. Repeat the treatment every day or two until improvement is noted.

WHEAT GERM OIL

Is available in these sizes:
Gallon
Quart
Pint
4-Ounces

GLOBE MIXED BACTERIN (OVINE)
FORMULA 1 (WHOLE CULTURE)

Recommended as an aid in the prevention of conditions due to the organisms listed in the formula.

CODE WORD:

250-c.c. PackageOVINE
125-c.c. PackageOFA
50-c.c. PackageOVO

HORSE SECTION

COLIC

Colic may result from improper feeds and feeding methods, constipation, fermentation of food in the stomach and intestines or enteritis. In some instances there is an abdominal swelling which is greater on the right side than on the left.

Affected animals are very restless, lie down, roll, get up and lie down frequently, and exhibit abdominal pain by kicking at the stomach.

In treating simple colic in horses and mules, mix 2 ounces of Globe Equi-Dine with a pint of mineral oil or raw linseed oil and give as a drench. Drench the animal slowly to avoid strangling.

Globe Equi-Dine contains drugs which help to relieve the pain and which check further gas formation in the stomach.

If the bowels have not moved within 24

hours after treatment, give one Equine Purgative Capsule or a dose of Globe Veterinary Purgative according to label directions.

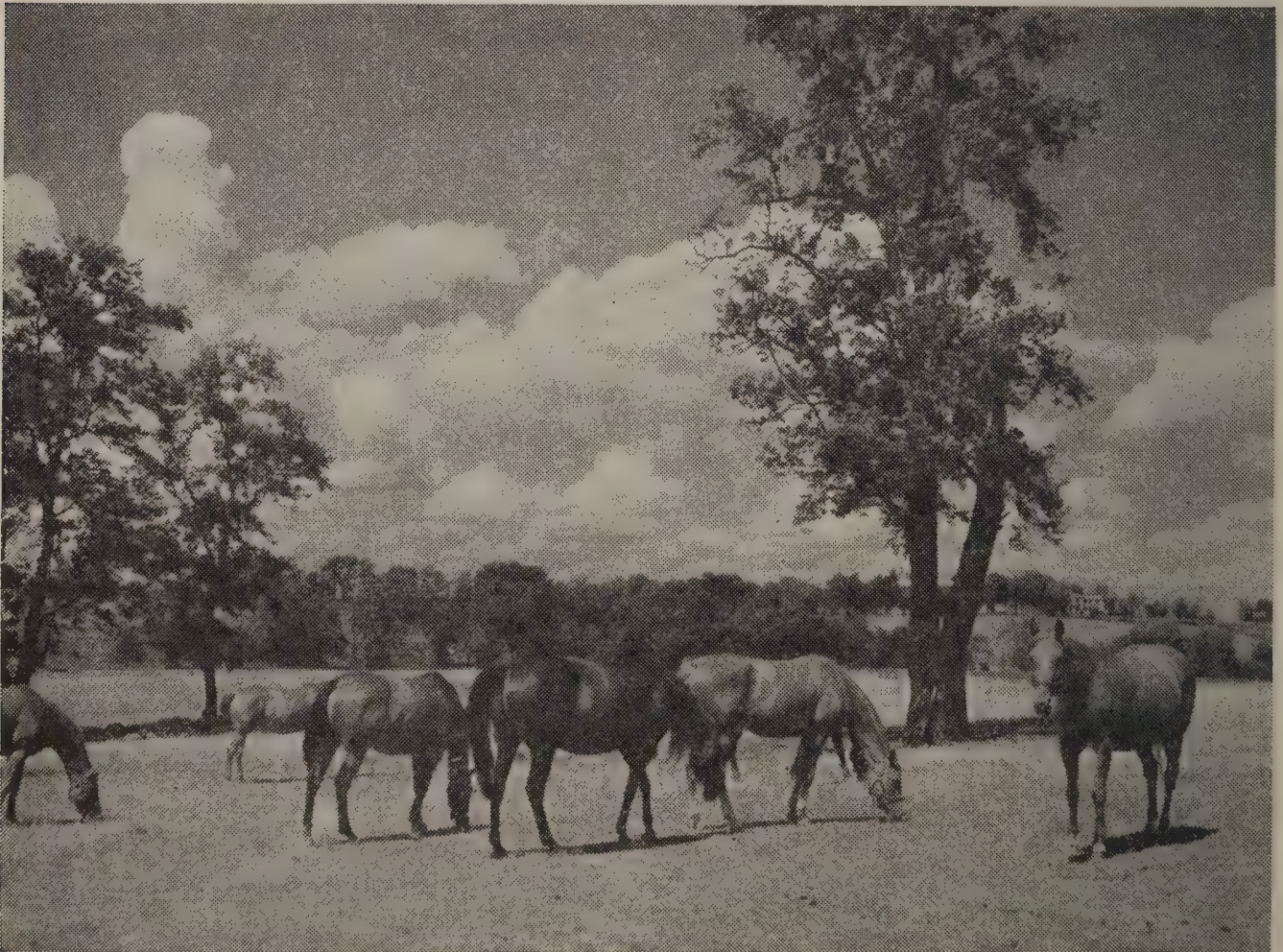
GLOBE EQUI-DINE

Every farmer who owns horses or mules should have a bottle of Globe Equi-Dine handy. These animals are subject to colic and in many cases, if treatment is not given in time, fatal results occur. Globe Equi-Dine is a valuable aid in conjunction with such other treatment as may be indicated in relieving simple colicky pains in horses and mules.

CODE WORD:

8-Ounce BottleEDINE

4-Ounce BottleWEDINE



GLOBE EQUINE PURGATIVE CAPSULES

For use in constipation, simple impaction of the bowels, and following worm treatment.

Code Word:

Package of 12 Capsules EPURGFUL

Package of 3 Capsules EPURG

GLOBE VETERINARY PURGATIVE

See Page 33

ENCEPHALOMYELITIS (Sleeping Sickness) IN HORSES AND MULES

This disease is caused by a filterable virus affecting the brain and spinal cord producing characteristic symptoms. All available evidence indicates that this disease is not transmitted directly from affected animals to non-affected animals but is apparently transmitted through the bite of blood-sucking insects, especially mosquitoes, that have fed on affected animals.

SYMPTOMS

There is a progressive involvement of the brain and spinal cord. Animals first appear excited and restless, followed by progressive depression. The animal walks in circles and is unable to take food. Spasmodic cramps or paralysis of the limbs develop, accompanied by a rapid shrink, tucked belly, and characteristic ridge in the flanks. There is also involuntary dribbling of the urine. The animal pushes the head against objects, and unilateral or bilateral facial paralysis, and paralysis or spasms of the lips, are characteristic symptoms. The membranes of the eyes are usually congested and often icteric (yellowish) and muscular tremors, coma, and finally death results. The temperature range is from 104° to 108° in the early stages but later may be subnormal. Incubation period ranges from 5 days to 3 weeks.

PREVENTION

A safe and satisfactory protection may be expected following the intradermal administration of Encephalomyelitis Vaccine. The ideal time for vaccination is about four to six weeks

prior to the usual time during which the disease appears in the territory, in order that protection may be established before exposure. Two intradermic injections are given. Follow directions which accompany the vaccine.

TREATMENT

Serum treatment is most likely to be effective when given very early in the course of the disease. Daily temperatures of all animals on the premises should be taken during an outbreak, so that the presence of the infection may be detected even before clinical symptoms have become apparent. All animals having a temperature of 103° or more, or that are showing symptoms of the disease, should be given an initial dose of at least 250 c.c. of Anti-Encephalomyelitis Serum. The serum treatment should be repeated at 24 to 48 hour intervals until recovery is apparent. Animals should be kept as quiet as possible. To prevent dehydration (lack of sufficient moisture in the body), a supply of cool drinking water should be kept before the animals at all times. Ice packs or cold water applied to the head will prove helpful in many instances. Enemas in some cases will prevent constipation. Avoid drenching sick animals, as they are very easily strangled while in this condition.

REMARKS

Unvaccinated horses are susceptible to attacks of this dreaded disease, which is capable of destroying a considerable part of the horse and mule population. The horse owner has at his command the most effective defense measure—vaccination.

FISTULA and POLL EVIL

These two conditions are identical, except for their location. Poll Evil occurs at the back of the head, while Fistula occurs in the region of the withers. Bruising of the tissues in these regions is generally the primary cause of these conditions and oftentimes is not complicated with bacterial factors. In some cases bacteria, such as *Streptococcus* (pyogenic), *Staphylococcus albus* and *aureus*, and *Escherichia coli* are complicating factors.

SYMPTOMS

A swelling occurs in the region of the withers or at the poll. The swelling gradually enlarges and is filled with a thick, clear mucus or flocculent pus. The abscess may rupture and drain in a few weeks, but many cases do not.

TREATMENT

Cut the abscess at its lowest part to establish drainage, and paint the cavity with tincture of iodine. Furnish a ration that is adequate in all the essential minerals and vitamins and supplement this with a tonic powder containing arsenic. A prolonged period of rest may be necessary. In severe cases, recovery is slow.

REMARKS

Cores that form in the tissues must come out before healing can take place, so treatment should be continued over quite a period of time, keeping the abscess open to allow proper drainage.

GLOBE W-A-C POWDER

Formula: Arsenous Acid 1.5%, Potassium Iodide 2.5%, Sulphur (Flowers) 1%, Willow Bark 70%, Linseed Meal 25%.

Globe W-A-C Powder is a tonic powder for horses and mules, containing the ingredients listed in the above formula. This formula has been used for many years as a tonic and alterative for horses recovering from debilitating diseases.

Dose: One teaspoonful morning and night in the feed, preferably in one quart of oats and bran, equal parts, slightly moistened and fed in addition to the regular ration. After 1 pound has been fed, increase the dose to 2 teaspoonfuls night and morning for 3 or 4 days, and then return to the original dose until another pound has been fed.

CODE WORD:

1-Lb. Pkg.WILBARC

INFLUENZA
(Stable Pneumonia)

This is an infectious and contagious disease of horses and mules and is generally believed to be caused by a filterable virus. Fatigue and exposure to cold drafts predispose animals to an attack. Influenza in itself is not usually a fatal disease; however, the resistance of affected animals is lowered to such an extent that secondary bacterial factors such as Streptococcus (pyogenic), Staphylococcus albus and aureus, Pasteurella equiseptica, and Escherichia coli usually complicate the condition.

SYMPTOMS

The disease has a sudden onset, characterized by loss of appetite, chills and coughing. There is a high fever and a mucous discharge from the nose develops, which usually has a bad odor.

Complications of this disease may develop in a few days in the form of pneumonia; diarrhea, intestinal involvement; or stiff, sore joints. Pink eye is a rather common form of influenza, affected animals developing a milky cornea and swelling of the eyelids; swelling may also occur in the legs and abdominal region.

PREVENTION

Horses contract this disease from contact with affected animals, contaminated water pails, etc. New animals should be quarantined fourteen days before being allowed access to stalls and lots where other horses are quartered.

TREATMENT

There is no specific treatment for this condition. The subcutaneous or intravenous administration of 100 to 250 c.c. of Anti-Hemorrhagic Septicemia Serum (Equine Origin) or Normal Serum (Equine Origin) daily as needed may prove helpful. Sulfanilamide may prove beneficial in those cases that are complicated with Streptococcus infections. Animals in a weakened condition should be given injections of Globe Camphoil and Globe Sterile Glucose Solution as needed. To prevent constipation, give one or two ounces of Epsom salts in the drinking water daily.

REMARKS

Affected animals should be given easily digested foods, housed in a well ventilated stall, and blanketed in cold weather to keep them as comfortable as possible. Globe Veterinary Tonic Powder may be added to the feed to help promote lagging appetite in convalescent animals.

GLOBE NORMAL SERUM
(Equine Origin)

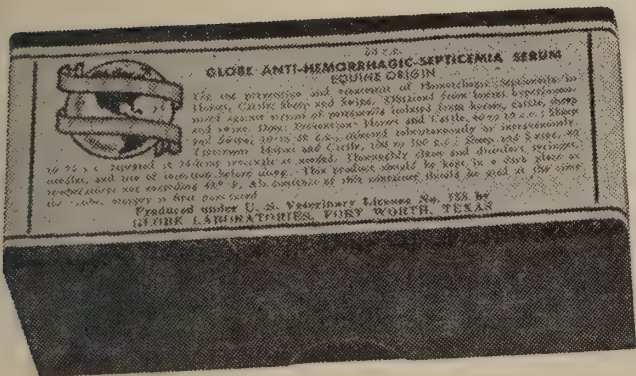
A Sterile serum obtained from blood of healthy normal horses. For use in acute anemia, hemorrhage, shock, or any condition where enrichment of the blood is indicated.

Dose: Horses and Cattle, 100 to 250 c.c. daily as needed, injected subcutaneously or intravenously.

CODE WORD:

- 250-c.c. PackageNORSE
- 100-c.c. PackageNORUM
- 50-c.c. PackageNORWEE

GLOBE ANTI-HEMORRHAGIC-SEPTICEMIA SERUM
(Equine Origin)

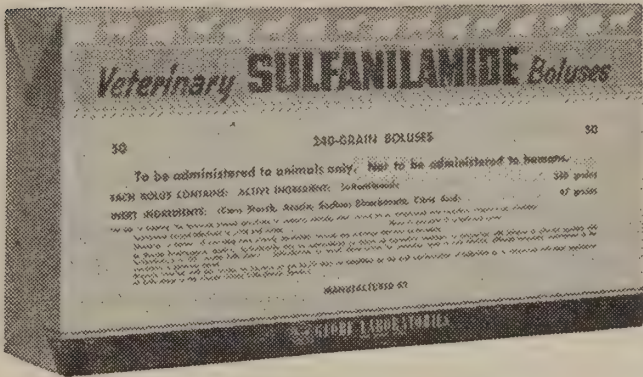


CODE WORD:

- 250-c.c. PackageSERFUL
- 100-c.c. PackageSERPES
- 50-c.c. PackageSERWEE

GLOBE SULFANILAMIDE TABLETS,
Veterinary, See Page 32

GLOBE SULFANILAMIDE BOLUSES
Veterinary, See Page 32



GLOBE CAMPHOIL

A circulatory and respiratory stimulant for intramuscular injection. Active Ingredients: Camphor and Ether.

CODE WORD:

- 100-c.c. BottleOILFUL
- 50 c.c. BottleOILMED
- 10-c.c. BottleOILSO

GLOBE STERILE GLUCOSE SOLUTION, See Page 16

GLOBE VETERINARY TONIC POWDER, See Page 33

INTERNAL PARASITES
of HORSES and MULES

Internal parasites are frequently encountered in horses and mules, resulting in "hard keepers," loss of weight, anemia, colic symptoms, and a dull, rough coat. A pot-bellied appearance is common in colts.

Bot larvae, ascarids (large round worms), and strongyles are the most common internal parasites of horses and mules. The eggs or larvae of these parasites gain entrance to the intestinal tract through the mouth, and upon reaching the stomach or intestines they begin to develop at the expense of the host.

The Bot Flies deposit their eggs on the hair of the forelegs, shoulders, neck and muzzle of horses and mules. The animal gets the larvae from these eggs into the mouth while rubbing or licking itself. The larvae, upon reaching the stomach, attach themselves to the stomach wall and in this way produce considerable irritation.

The most effective method of controlling "bots" consists of giving all horses a Bot Capsule between the first of December and

the first of March. Horses and Mules weighing over eight hundred pounds should receive one 6-dram capsule, while the lighter animals should be given a 3-dram capsule. By worming during this period, the life cycle is broken and the larvae which pass out on the ground are destroyed by the cold, thus reducing the number of flies in the fall.

The Agricultural Department of one of our leading universities made the statement that "It was worth \$5.00 to any farmer's horse to be freed of Bots. He came out of winter in better condition, consumed less feed, and was more able to do the hard farm work."

Ascarid eggs are taken into the mouth with contaminated feed or water. These parasites produce an irritation in the intestines and a diarrhea may persist. More serious effects are produced in colts than in older animals.

To eliminate ascarids from horses and mules, give one 6-dram Equine Worm Capsule to animals weighing over 1,000 pounds. For lighter animals, give one 3-dram capsule. Equine Worm Capsules should not be followed with a purgative.

There are a large number of species of strongyles that affect horses and mules. The larvae of these parasites are picked up by the animal while grazing, and upon reaching the intestines they develop into mature worms. The strongyles are blood-suckers and are often serious parasites in horses of all ages. Phenothiazine is highly effective in removing strongyles but should be used cautiously, since horses are occasionally quite sensitive to this drug. Globe Equine Worm Capsules are also effective for removing strongyles. Globe Veterinary Tonic Powder added to the feed according to label directions is suggested as an aid in restoring the appetite to normal following worm treatment.

GLOBE EQUINE BOT CAPSULES

Code Word:
Pkg. of Six 6-Dram CapsulesBOTSIX
Pkg. of Twelve 3-Dram Capsules . . .BOTWEE

**GLOBE PHENOTHIAZINE BOLUS
(12½ Grams), See Page 63**

**GLOBE PHENOTHIAZINE (Drench
Grade), See Page 62**

**GLOBE VETERINARY TONIC
POWDER, See Page 33**

GLOBE EQUINE WORM CAPSULES

For use in treating Horses and Mules infested with Strongyli (Palisade Worms) and Ascarids (Roundworms). These capsules are highly effective and safe to use.

Dose: Horses and Mules weighing 1,000 pounds or more, one 6-Dram Capsule. Animals weighing under 1,000 pounds, one 3-Dram Capsule.

CODE WORD:

4 Pkgs. of 25 each (100)
6-Dram CapsulesKARSEE
Pkg. of 25 6-Dram Capsules.....KARTIV
Pkg. of 6 6-Dram Capsules.....KARSIX

4 Pkg. of 25 each (100)
3-Dram CapsulesKARFOR
Pkg. of 25 3-Dram Capsules.....KARTUL
Pkg. of 6 3-Dram Capsules.....KARTRA

NAVEL ILL

This is a highly fatal disease of young foals, that may be caused by a variety of organisms such as Streptococcus (pyogenic), Staphylococcus albus and aureus, Escherichia coli, and Salmonella abortivoequina.

This disease may be contracted from the mother before birth or by contact with infected material after birth. Usually the colt contracts the infection through the navel cord soon after birth.

SYMPTOMS

The onset of the disease is usually sudden and animals appear dull, breathe hard and exhibit a general weakness. Pain and lameness, accompanied by a swelling of the joints, is noted. Death occurs in a few days, or the disease becomes chronic and drags on for several weeks.

PREVENTION

Cleanliness and strict sanitation are essential. Just before delivery the dam should be placed in a clean, well ventilated stall with plenty of good bedding. As soon as the colt is born the navel should be painted with tincture of iodine. Iodine should be applied two or three times for a few days, or until the navel heals completely.

TREATMENT

In animals already affected with this disease, the administration of 100 to 150 c.c. of Normal Serum (Equine Origin) daily as needed may prove helpful. Globe Sulfanilamide Tablets or Boluses, given according to label directions, may be of value in those cases caused by or complicated with Streptococcus infections.

REMARKS

Foals should be dried with a clean cloth immediately after birth and the mucus around the nose and mouth removed. Cleanse the mother's udder before allowing the foal to nurse. The navel cord should be painted immediately with tincture of iodine or some other reliable antiseptic.

GLOBE NORMAL SERUM (Equine Origin)

See Page 69

GLOBE SULFANILAMIDE TABLETS, VETERINARY

• See Page 32

GLOBE SULFANILAMIDE BOLUSES See Page 32

STRANGLES (Distemper)

This is an infectious disease of horses and mules caused by a pyogenic streptococcus (*Streptococcus equi*) which invades the tissues, particularly in the head and throat region. Strangles is most prevalent in young animals between six months and five years of age. The infection is picked up with food or water which has been contaminated with the infective agent.

SYMPTOMS

The condition develops suddenly. Affected animals usually have fever (104° to 106° F.).

There is a watery discharge from the nose which becomes thick and mucus-like in two or three days. In the majority of cases a swelling appears under the jaw, in the throat region, and an abscess appears in the course of a week or two; the abscess ruptures, allowing the pus to drain out, and the swelling recedes. Recovery is usually rapid following the draining of the abscesses.

In some cases the infection may become general, resulting in multiple abscesses throughout the body. Death is not uncommon in such cases.

PREVENTION

Segregate newly purchased animals from young, susceptible horses and mules for a period of two weeks. Bacterins containing the causative organisms are sometimes used to help prevent the infection.

TREATMENT

Give a course of treatment with Sulfanilamide according to label directions as soon as symptoms are noted. Affected animals should be given a complete rest and fed easily digested feeds. Keep clean, fresh water before the animals at all times. When the abscess becomes soft, puncture with a dull instrument to establish drainage.

REMARKS

Losses from Strangles are not usually extensive. Animals generally recover in two to five weeks.

GLOBE SULFANILAMIDE TABLETS, VETERINARY

See Page 32

GLOBE SULFANILAMIDE BOLUSES

See Page 32

TETANUS

(Lockjaw)

This disease is rather common in horses, especially in the Southern states. The tetanus organism (*Clostridium tetani*) is a common inhabitant of the intestinal tract, which makes lots, barns, manure piles, etc., a constant source of infection. The bacteria causing this disease enter the tissues through wounds, nail pricks, or any injury where the skin is broken, producing a toxin in the body which acts on the nerves.

SYMPTOMS

Stiffness, anxious expression and extreme nervousness. If the head is raised, the haw (third eyelid) will cover the eye. The muscular stiffness progresses until the muscles of the jaw are affected and eating is impossible.

PREVENTION

When nail punctures, cuts, wounds, etc., occur, and following castration operations, immediately give 1,500 units of Tetanus Antitoxin as a preventive measure.

TREATMENT

Locate the site of infection and thoroughly clean and cauterize with tincture of iodine or 10% silver nitrate solution. Place the animal in a dark, quiet stall, where water and feed can be easily reached, and give 40,000 to 100,000 units of Tetanus Antitoxin the first day that symptoms are noticed. Administration of 1,500-unit doses two or three times daily following the initial dose, has proven beneficial in the treatment of this disease, but many cases fail to respond, especially when symptoms are well developed at the time treatment is

started. A cupful of Epsom salts in a bucketful of drinking water occasionally will prevent constipation.

REMARKS

During the period of recovery, a horse will remain stiff in its gait for some time; care should be taken to see that the animal does not fall and injure itself during this period.

GLOBE MUS-L-EZE FOR MAN OR BEAST

A general purpose liniment—soothing, cooling, cleansing—especially for simple muscle soreness. Will not blister nor injure the hair or skin.

DIRECTIONS

Strained Tendons and Simple Muscle Soreness: Steam the affected parts with hot water for 5 to 10 minutes to open the pores of the skin. Rub dry. Then wet the skin thoroughly with Mus-L-Eze, rubbing in well. Apply as often as necessary—the more often, the better the results. Bandaging the affected parts (over cotton, where possible) with one part Mus-L-Eze in two parts of water is helpful. Bandages should be removed in 2 to 4 hours, and Mus-L-Eze again rubbed well into the affected parts.

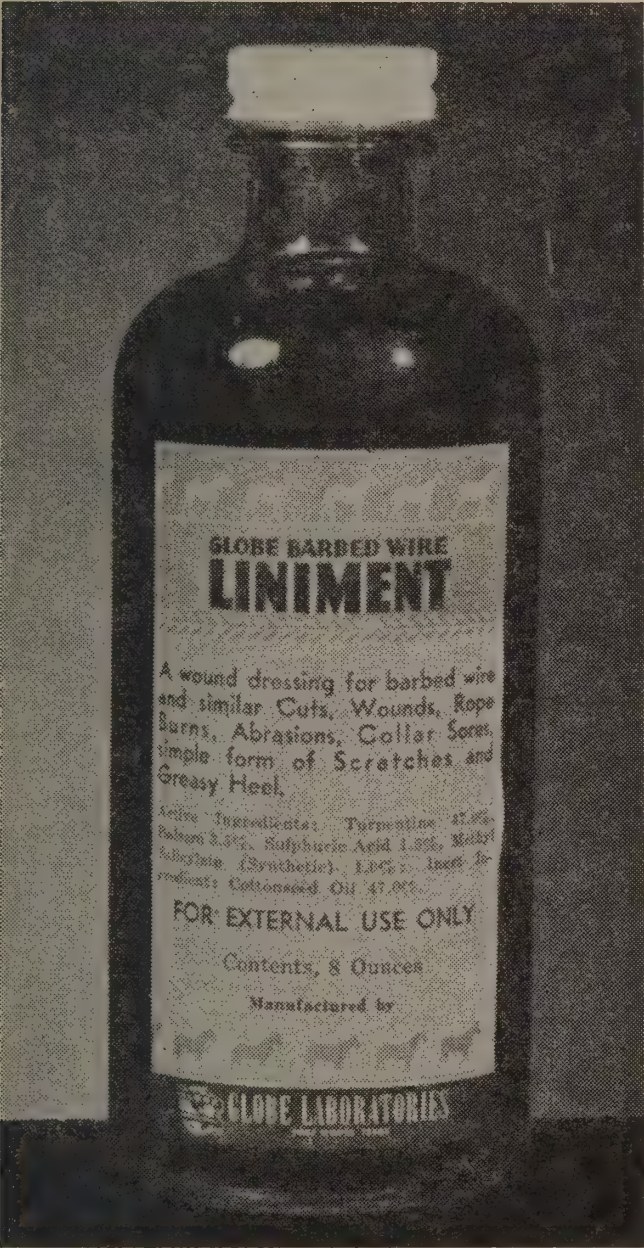
Leg Wash: Vinegar 8 ounces, Water 24 ounces, Mus-L-Eze 2 ounces, Potassium Nitrate ½ ounce.

Trainer's Rub: Mus-L-Eze 2 ounces in one quart hot water.

CODE WORD:

8-Ounce BottleMUSL
4-Ounce BottleMUS

GLOBE BARBED WIRE LINIMENT



A wound dressing for barbed wire and similar cuts, wounds, rope burns, abrasions, collar sores, simple form of scratches, and greasy heel. This product has outstanding merit as evidenced by long years of field usage with excellent results.

CODE WORD:

8-Ounce BottleBARBE

TATTOO INK

CODE WORD:

2-Ounce Bottle
1-Ounce Bottle

GLOBE GALL LOTION

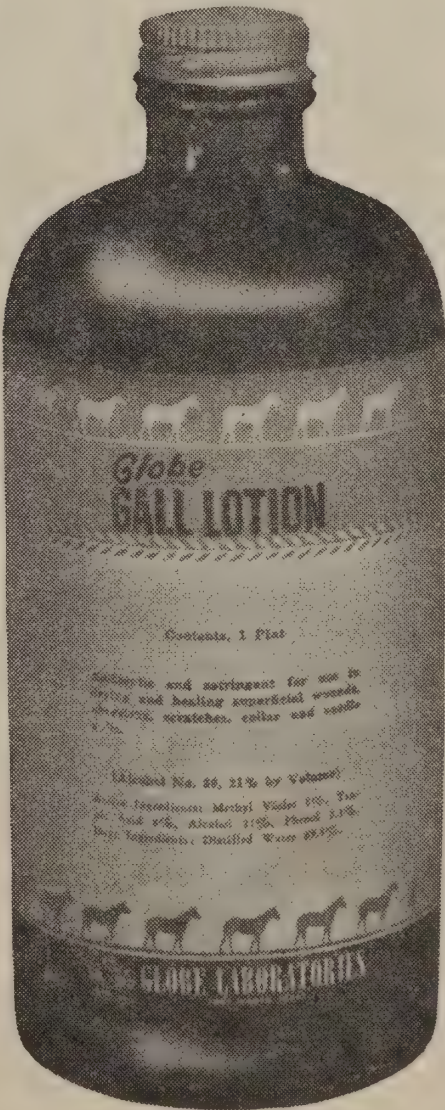
Antiseptic and astringent for use in drying and healing superficial wounds, abrasions, scratches, collar and saddle galls.

DIRECTIONS

Thoroughly clean and dry the wounds or abrasions with cotton or gauze before each application. Apply night and morning or as often as necessary. That portion of collars, harness and saddles coming in contact with the affected parts should be washed and dried daily. Animals may be worked if the conditions are not too painful.

CODE WORD:

Pint BottleGALLFUL
8-Ounce BottleGALLMED
4-Ounce BottleGALLO



GLOBE MIXED BACTERIN (EQUINE)
Formula 2

Formula: 30% Streptococcus (pyogenic),
20% Staphylococcus albus and aureus
(10% each), 20% Escherichia coli,
30% Salmonella abortusovae.
May help prevent Navel Ill in foals when
the condition involves the organisms listed in
the formula.
Dose For Prevention: In Non-affected
Herds, Colts 3 to 5 c.c. injected into the mus-
cle. Healthy Colts in Affected Herds, 5 to 10
c.c. per animal, repeated at 48-hour intervals
as needed.

CODE WORD:

50-c.c. PackageNABAC
25-c.c. PackageNAVIL

GLOBE MIXED BACTERIN (EQUINE)
Formula 1

Formula: 30% Streptococcus (pyogenic),
20% Staphylococcus albus and aureus
(10% each), 30% Pasteurella
equiseptica, 20% Escherichia coli.
A suggested aid in controlling those condi-
tions due to the organisms listed in the formula
which were isolated from the tissues of horses.
Dose For Prevention: Horses and Mules in
Non-affected Herds, 5 c.c. injected into the
muscle. Healthy Animals in Affected Herds:
10 c.c. per animal, repeated at 48-hour inter-
vals as needed.

CODE WORD:

50-c.c. PackageEQVAC
25-c.c. PackageEQUI

**MISCELLANEOUS
SPECIALTIES**

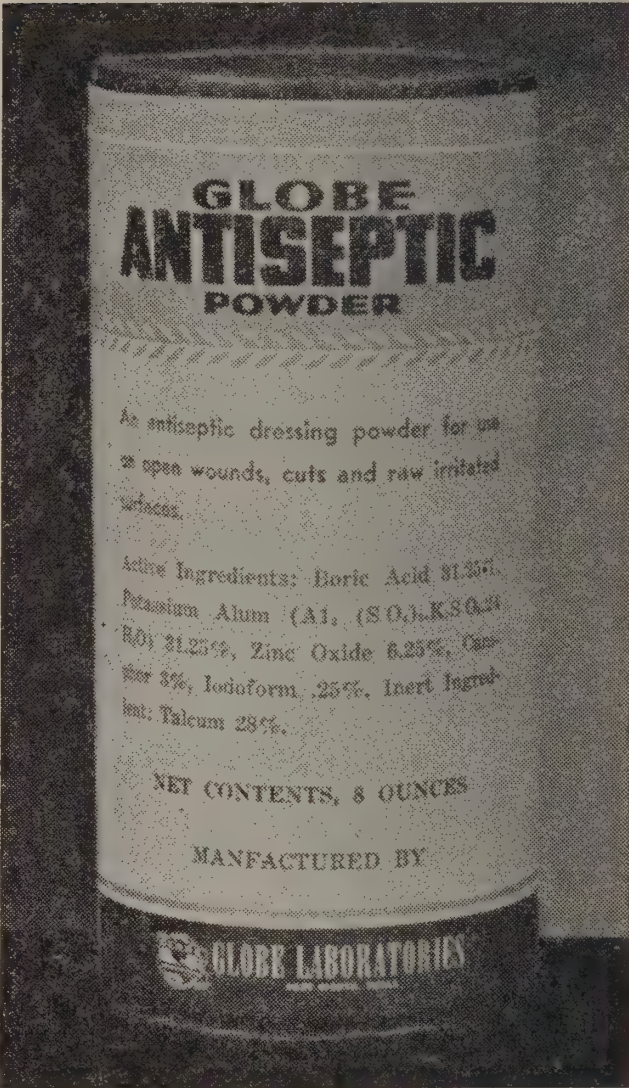
GLOBE BLUE RIBBON FLY SPRAY

A household spray of high quality (AA
Grade). Contains "Velsicol" "1068" and
Synergized Pyrethrum Extract. Kills flies,
mosquitoes, bedbugs, fleas, clothes moths,
chiggers, and redbugs when used as directed.

CODE WORD:

1 GallonRIBFUL
QuartRIBON
PintRIBIT

GLOBE ANTISEPTIC POWDER



An antiseptic dressing powder for use on
open wounds, cuts, and raw irritated surfaces.
Active Ingredients: Boric Acid, Alum, Zinc
Oxide, Camphor, Iodoform.

CODE WORD:

8-Ounce ContainerDUSTFUL
4-Ounce ContainerDUSTO

GLOBE COPPER-IRON MIXTURE

For use in the drinking water of livestock
and poultry. Active Ingredients: Copper Sul-
phate and Iron Sulphate.

CODE WORD:

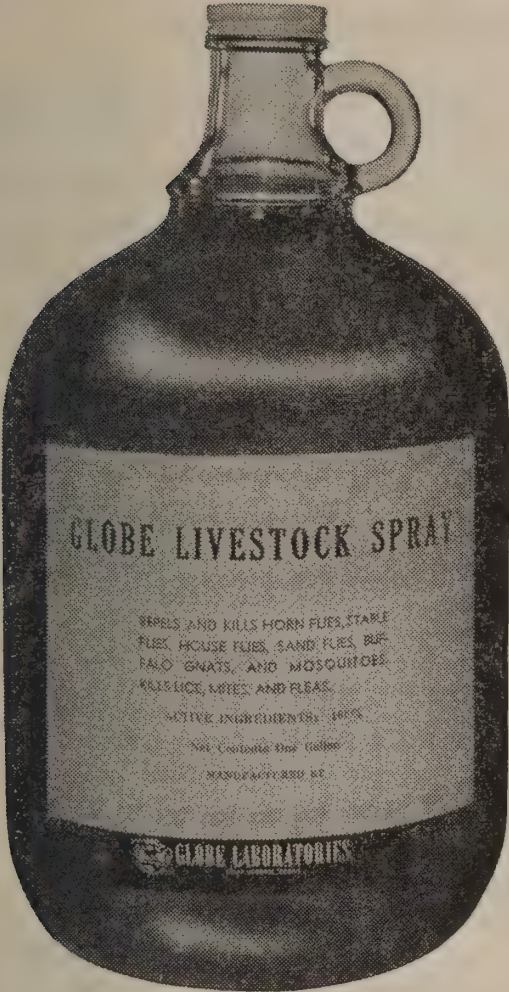
100-Pound DrumCOPFUL
25-Pound DrumCOPBAG
5-Pound PackageCOPFIV
1-Pound PackageCOPRON

**GLOBE 50% CRESYLIC
DISINFECTANT**

CODE WORD:

4-Ounce BottleCRELU

GLOBE LIVESTOCK SPRAY



Repels and kills horn flies, stable flies, house flies, sand flies, buffalo gnats, and mosquitoes. Kills lice, mites, and fleas.

CODE WORD:

1 GallonLISPRA

GLOBE RID-ROACH

Kills roaches, ants, and silver fish.

CODE WORD:

4-Ounce PackageROACH

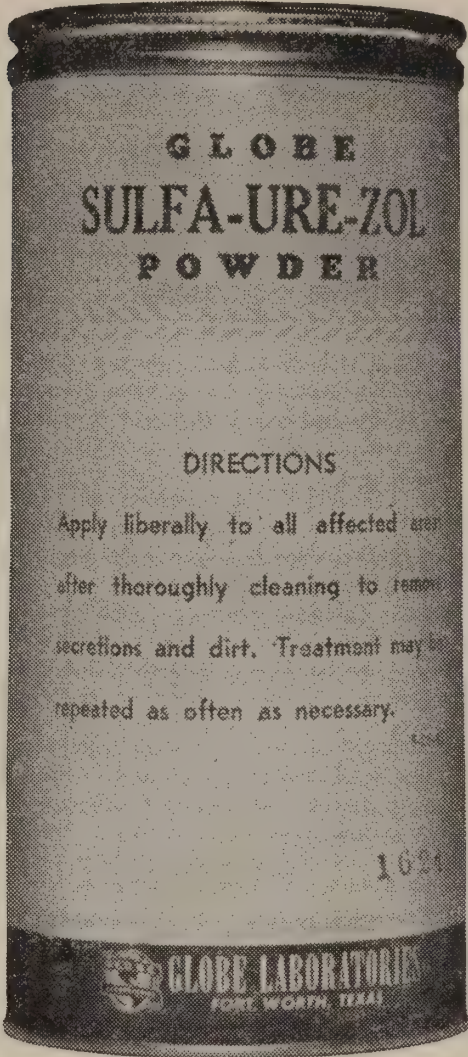
GLOBE SULFA-URE-ZOL OINTMENT

This antiseptic ointment, like Sulfa-Ure-Zol Powder, contains sulfanilamide, sulfathiazole, and urea. It is for veterinary use only. This ointment will do anything the powder will do when applied liberally to all affected areas (surface wounds, cuts, and abrasions in domestic animals).

CODE WORD:

4 OuncesSULUR

GLOBE SULFA-URE-ZOL POWDER



An antiseptic powder for treatment of surface wounds, cuts, and abrasions in domestic animals.

CODE WORD:

8 OuncesURZFUL

4 OuncesURZOL

WHEAT GERM OIL

A cold processed, biologically tested, stable wheat germ oil.

CODE WORD:

1 Gallon

Quart

Pint

4 Ounces

DOG SECTION

DISTEMPER

Canine Distemper is an acute infectious disease of young dogs affecting chiefly those under one year of age. It is the most destructive and widespread of all the contagious diseases to which dogs are susceptible.

CAUSE

Distemper is caused primarily by a filterable virus, but seldom does it occur as a pure virus infection. During the virus phase of the disease the resistance of the affected animal is greatly reduced, affording an opportunity for secondary bacterial infections. The secondary infections produce serious complications, increasing the severity of the disease, prolonging its course and contributing significantly to the mortality. The bacteria which occur most commonly in the secondary infections are *Brucella bronchi-septica*, *Pasteurella caniseptica*, *Staphylococcus albus*, *Staphylococcus aureus* and *Streptococci* of the pyogenic or pus-producing group.

SYMPTOMS

Because of the complexity of distemper, the symptoms are extremely variable. Only the more common symptoms are mentioned here. One of the first signs is fever generally accompanied by loss of appetite. Constipation in the early stages is usually followed by diarrhea. Vomiting is frequently seen in cases where the stomach is involved. Complications affecting the respiratory tract lead to coughing, labored breathing, nasal discharge and incrustations around the nostrils. A discharge from the eyes causes the formation of crusts on the lids. Nervous symptoms include yelping, spasms, convulsions, or frequently merely dullness and depression.

PREVENTION

Vaccination is often effective. Many factors must be taken into consideration, especially when distemper virus is used, and for this reason it is wise to consult a competent veterinarian. Unvaccinated puppies should be kept away from older dogs insofar as possible.

TREATMENT

Treatment is not always successful. In severe outbreaks the mortality may reach 50% or higher. It is advisable, especially when valuable animals are involved, to obtain competent veterinary advice. In treating a dog with distemper, good care and nursing are among the most important points to keep in mind. The animal should be kept comfortable and protected from drafts and extremes of temperature. Tempt the dog to eat by offering such foods as scraped raw meat, warm milk, beaten eggs or meat broth. Clean fresh water should be accessible at all times. If the eyes are encrusted with discharges, wash the eyes and eyelids with Globe Dog Eye Wash. A teaspoonful of Globe Dog Expectorant twice daily may help loosen accumulations of mucus in the throat.

GLOBE DOG EXPECTORANT

CODE WORD:

4-Ounce BottleDOGANT

GLOBE DOG EYE WASH

See Page 81



EAR CANKER

(Ear Mange)

CAUSE

Ear Canker or Ear Mange is caused by a particular species of mite, a small eight-legged insect which lives and multiplies in the ear canal. The mites puncture the delicate lining of the canal to obtain tissue juices which constitute their food. This activity causes irritation and inflammation of the tissues, often leading to accumulations of wax and scabby material that may plug the ear canal. A careful examination of material removed from an infested ear may reveal the presence of mites—tiny light-colored moving bodies barely visible to the naked eye.

SYMPTOMS

Dogs affected with ear mange usually paw and rub the ears, shake the head frequently, or turn the head to one side. If not properly treated before reaching an advanced stage, incurable infections of the deeper structures of the ear may follow.

TREATMENT

First remove scales and hard ear wax from the ear canal with a wire loop or cotton swab, using care to avoid injury to the tissues. Then inject or pour a small quantity of Globe Ear Canker Emulsion into the ear canal. Hold the ear in an upright position and manipulate with the fingers to aid penetration of the emulsion into the canal and contact with all affected parts. Wipe off any excess that escapes from the ear in order to avoid possible loss of hair or blistering when exposed to the sun. Treatment may be repeated in 30 days or often-er if necessary.

GLOBE EAR CANKER EMULSION

For treatment of Ear Canker (Ear Mange) in dogs, rabbits, cattle, horses and sheep.

CODE WORD:

8-Ounce BottleEMUL

4-Ounce BottleEAKA

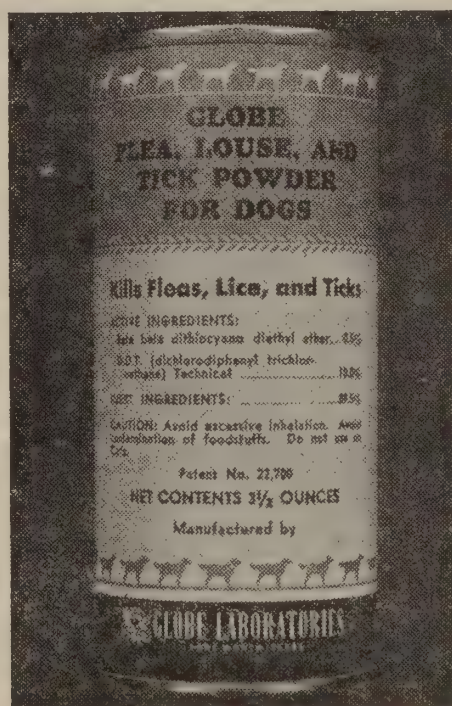
EXTERNAL PARASITES

The fleas, lice and ticks are the most common and serious of the insect pests infesting dogs. Dog fleas and ticks, if not controlled, may become established in kennels, garages and homes, causing considerable annoyance and discomfort.

Globe Flea, Louse and Tick Powder, which combines the action of DDT with other active ingredients, is formulated especially for the control of these pests on dogs. Simply dust Globe Flea, Louse and Tick Powder into the dog's coat and rub down to the skin. Since ticks are not easily killed, repeated applications may be necessary for complete control.

For control of fleas and ticks in houses and dog pens, dust Globe Flea, Louse and Tick Powder in the dog's bed and other places where the dog sleeps. Apply dust to floors, beneath rugs, and in cracks and crevices. Do not remove powder for at least two weeks. To control fleas in the dog pen, dust the ground, using one ounce of powder for each 125 square feet. Repeat whenever reinfestation occurs. Globe Dog Shampoo and Flea Soap may be used to kill fleas and lice on dogs. Wet the animal thoroughly with warm water and apply Globe Dog Shampoo and Flea Soap liberally.

GLOBE FLEA, LOUSE AND TICK POWDER FOR DOGS



CODE WORD:

3 1/2-Ounce Shaker—Top Container.....FEA

GLOBE DOG SHAMPOO AND FLEA SOAP

CODE WORD:

1-Gallon BottleSHGA
8-Ounce BottleSHAM
4-Ounce BottleSHA

MANGE

There are two common and distinct types of mange affecting dogs, Sarcoptic and Demodectic or red mange.

SARCOPTIC MANGE

CAUSE

Sarcoptic mange is caused by a mite (*Sarcoptes scabiei*) which burrows into the skin. The sarcoptic mites are too small to be seen with the naked eye. The mites breed and reproduce in the skin of an infested animal, invading more and more of the tissues as the number of mites increases. The life cycle is short and it has been estimated that a pair of mites may produce over a million descendants in three months time. Dogs of all ages and breeds are susceptible. Since sarcoptic mange may be transmitted to man, it is extremely important to treat affected dogs promptly, especially pets that are handled frequently by children.

SYMPTOMS

Any part of the body may be affected, but sarcoptic mange usually appears first on the head, especially around the eyes, nose and at the base of the ears. Sometimes the first signs of the disease are seen on the chest, the inner surfaces of the legs or on the belly. There is intense itching and scratching resulting in moist sores where the outer layer of skin has been rubbed off. This gradually dries and the skin becomes scabby and thickened. The hair falls out. Occasionally the skin remains dry and has a scaly appearance. Affected dogs give off a characteristic offensive "mousy" odor. If not treated, the condition may spread over the entire body and lead eventually to emaciation and death.

DEMODECTIC MANGE

CAUSE

Demodectic mange is caused by a mite (*Demodex canis*) which invades the hair follicles and skin glands. This form of mange occurs most commonly in young dogs.

SYMPTOMS

Small reddened areas of skin around the eyes, on the toes, hocks, elbows or other parts of the body are the earliest signs. The hair in the affected areas falls out or has the appearance of having been clipped close to the skin. There is little or no itching in the early stages, and itching is never as intense as in sarcoptic mange. The affected areas gradually become larger and pustules may form. The skin becomes thickened. Demodectic mange is a very slow chronic type of disease often lasting for years. Affected animals lose weight and may eventually die if the condition is not properly treated.

TREATMENT FOR MANGE

Proper treatment of mange involves three things—diet, disinfection, and local applications to the skin.

First make sure that the dog is getting a good balanced ration adequate in all the essential minerals and vitamins. Faulty nutrition may play an important part, especially in red mange. In fact some cases of red mange have recovered spontaneously after correction of dietary deficiencies. Globe V. M. P. Supplement or Globe Vitamin Capsules made especially for dogs and puppies may be used to supplement the ration.

When treatment is started, clean and disinfect the quarters and burn all litter and used bedding in order to prevent reinfestation.

For local applications to affected areas of skin to kill the mange mites, Globe Mange Remedy is highly recommended. Globe Mange Remedy is a new type preparation which is easy to use, clean, stainless, greaseless, practically odorless, and highly effective for both Sarcoptic and Demodectic Mange. Before applying Globe Mange Remedy, clip the hair around all affected areas; if necessary, clip the entire body. Then wash the dog thoroughly with soap and water and rinse well.

In treating Sarcoptic Mange apply Globe

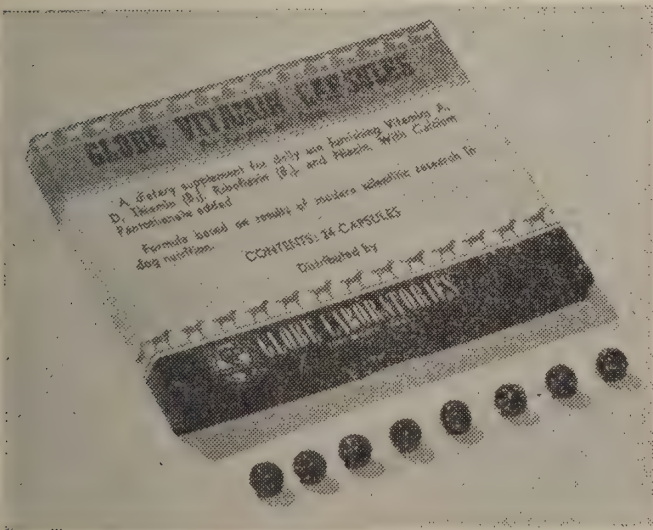
Mange Remedy to all effected areas with a cotton swab or dauber. Allow the application to dry, then apply a second time. On the following day bathe the animal. One treatment is usually sufficient, but in stubborn cases it may be necessary to repeat in seven days.

In treating Demodectic Mange, apply Globe Mange Remedy daily for seven days, gently massaging it into and around each lesion. Examine the animal closely each day for thirty days and treat promptly any new lesions that appear. Thereafter, treat as often as necessary. Demodectic Mange is much more difficult to cure than Sarcoptic Mange.

GLOBE DOG V-M-P SUPPLEMENT

A nutritional supplement for dogs.
CODE WORD:
12 OuncesVIM

GLOBE VITAMIN CAPSULES
For Puppies and Dogs



A dietary supplement for daily use furnish- ing Vitamins A, D, Thiamin (B₁) Riboflavin (B₂), and Niacin, with Calcium Pantothenate added. Formula based on results of modern scientific research in dog nutrition.

CODE WORD:
Box of 24 Capsules.....VICAP

GLOBE MANGE REMEDY

A simple and effective treatment for Sarcop- tic Mange and Demodectic (Red) Mange in dogs. Not for use on cats or rabbits.

CODE WORD:
6-Ounce BottleMANGE

NUTRITIONAL
DISORDERS

The nutritional requirements of dogs are just as exacting as those of human beings, al- though they differ quantitatively. What a dog eats is determined largely by what his master chooses to feed him. Many disorders can be traced to feeding rations that are deficient in one or more of the essential nutrients. As a general rule, nutritional disease in a dog is not the result of a single deficiency, but rather the lack of several dietary essentials, for a diet lacking in one essential nutrient is almost cer- tain to be deficient in several others. Conse- quently the symptoms are often of a general and nonspecific character, and diagnosis is dif- ficult.

The elements most likely to be deficient are the minerals, vitamins and high quality pro- teins. Minerals, principally calcium and phos- phorus, are essential for the prevention of rickets. These two minerals must be present in adequate amounts and proper proportions, and can be utilized for bone building only if the dog gets enough vitamin D. Meat, milk and eggs are the best sources of high quality pro- tein which, among other things, is essential for normal growth and good health.

The dog requires a numberof vitamins, in- cluding A, B₁, B₂, D, niacin and calcium pan- tothenate. A deficiency of niacin causes a specific disease known as Blacktongue, charac- terized by inflamed and ulcerated areas in the mouth and intestine, loss of appetite, diarrhea and eventually death. Blacktongue is frequent in dogs maintained largely on such inadequate feeds as potatoes, corn meal and salt pork.

As more is learned about dog nutrition, the necessity for other vitamins will probably be discovered. To insure your dog against deficiencies of those vitamins which are definitely known to be essential for adequate nutrition, use Globe Vitamin Capsules (for puppies and dogs) as a daily dietary supplement. One to three capsules daily, according to body weight, will furnish at least the minimum daily requirement of the vitamins listed in the formula, insofar as these requirements are well known at the present time. Globe V-M-P Supplement, containing wheat, may also be used to supplement the ration.

GLOBE VITAMIN CAPSULES
(For Puppies and Dogs)
See Page 79

GLOBE DOG V-M-P SUPPLEMENT
See Page 79

RABIES
(Hydrophobia)

Rabies is a fatal, virus disease, most commonly seen in dogs, although all animals and man are susceptible. This disease is transmitted only through the bite of a rabid animal or by the saliva of an affected animal through a cut or skin abrasion. In recent years outbreaks of rabies among foxes have reached serious proportions in many areas. Rabid foxes often bite cattle, horses and other farm animals, thus transmitting the disease to valuable domestic livestock.

SYMPTOMS IN THE DOG

Affected animals become irritable and restless, and seek seclusion. The excitement increases as the disease progresses and the animals wander from home and often attack objects in their path.

In the latter stages, the animals become less vicious, are unable to swallow, and paralysis of the hind parts develops, which soon becomes generalized. Death usually occurs from the fifth to eighth day of the attack.

PREVENTION

Annual vaccination of all dogs with Rabies Vaccine, preferably in the spring, is considered by most authorities to be, under average con-

ditions, an effective preventive measure. Annual vaccination of dogs against Rabies is required by many cities as a public health measure.

RABIES VACCINATION
DOSAGE

For prevention in non-affected animals:
Small dogs (under 10 lbs.) 3 c.c.
Dogs weighing 10 to 50 lbs. 5 c.c.
Dogs over 50 lbs. 10 c.c.
Sheep and Goats 5 c.c.
Horses, Mules and Cattle 10 c.c.

Inject the dose of Vaccine under the skin at two or three different points. While a single dose furnishes adequate protection for most animals, a more solid and lasting immunity is obtained by at least two injections made at weekly intervals.

Rabies Vaccine is a safe sterile product, and cannot produce the disease Rabies, or any other disease in man or animal.

TREATMENT

There is no treatment for animals that have developed rabies and all such animals should be promptly confined and a veterinarian consulted or your public health authorities notified.

REMARKS

All dogs, regardless of age, size, or breed, should be vaccinated ONCE EACH YEAR. In some states and communities, and in many foreign countries, vaccination of all dogs is compulsory. It is a public health obligation of all dog owners to protect the people, especially the children, in the neighborhood against this fatal disease. Ask your neighbors to cooperate with you by vaccinating their dogs, and to assist you in doing all possible to rid your neighborhood of stray dogs.

GLOBE RABIES VACCINE
OVINE ORIGIN, PHENOLIZED
SUSPENSION 20 PER CENT

CODE WORD:

50-c.c. Vial RABFU
6-Dose Package
 (Six 5-c.c. Vials) VACFUL
1-Dose Package
 (One 5-c.c. Vial) VACRA

RUNNING FITS (FRIGHT DISEASE)

Running Fits or Fright Disease is an obscure condition affecting the nervous system of dogs. It is apparently not the same thing as fits associated with teething and intestinal parasites in young puppies.

CAUSE

The cause of running fits is still not definitely known. Many theories as to the cause have been advanced from time to time and they include such factors as indigestion, worms, deficiency of vitamin A, deficiency of vitamin B1 lack of good quality protein in the diet, toxic substances in the diet and hereditary defects. None of these theories has been substantiated on a sound scientific basis. Miscellaneous irritations such as ear canker or stoppage of the anal glands, and unusual activity or excitement may precipitate an attack of running fits.

SYMPTOMS

The disease is characterized by intermittent attacks during which the affected animal barks, runs wildly, and shows signs of great fear. Convulsions, champing of the jaws and foaming at the mouth are frequently noted. Affected animals usually recover in a short time but are subject to repeated attacks. Running fits rarely cause death.

TREATMENT

Confine the animal in dark, quiet, comfortable quarters until recovery takes place. Correct any dietary deficiencies that may exist. High quality protein such as furnished by raw meat, milk, and eggs, and dietary supplements containing the essential vitamins may be used to fortify the ration. (See Nutritional Disorders, page 79). Check for the presence of any other suspected causative factors mentioned in the paragraph under "Cause," and make whatever corrections may be indicated. (See "Internal Parasites," page 81, and "Ear Canker," page 77.) Treatment is not always successful and recurrent attacks are commonly seen.

SIMPLE EYE IRRITATIONS

Irritation of the eyes occurs frequently in dogs as a result of foreign particles in the eyes, eye injuries, colds and fever.

TREATMENT

The animal—particularly the eyes—should be examined carefully to determine the cause. After removal of the cause, apply a few drops of Globe Dog Eye Wash in the affected eyes three or four times daily; bathe the corners of the eyes to remove accumulated secretions, using cotton saturated with the Eye Wash. Repeat treatment as often as necessary. If the condition does not improve within a few days, consult your veterinarian.

Globe Dog Eye Wash contains Zinc Sulfate and Butyn Sulfate; it is soothing and cleansing, with a local anesthetic action to relieve the pain which causes the animal to rub and scratch the eyes, thus increasing irritation and discomfort.

GLOBE DOG EYE WASH

CODE WORD:

One-Ounce Dropper Bottle DOGEYE

INTERNAL PARASITES

Dogs may become infested with a number of intestinal parasites, including Large Roundworms (Ascarids), Hookworms and Tapeworms. The life cycle of the Roundworms is direct, that is, dogs become infested directly by ingesting worm eggs which have been passed in the feces of infested animals. The life cycle of the hookworms is also direct, but the worm eggs hatch outside the body and the tiny worm produced in this way gets into the dog either by way of the mouth or by burrowing through the skin. Hookworms which enter through the skin finally reach the intestines by means of the blood stream.

The Tapeworms have an indirect life cycle which requires an intermediate host in which the immature or larval stage of the parasite must develop. Fleas and lice serve as intermediate hosts for one species of dog tapeworm,

while rabbits, sheep, goats, cattle, and swine act as intermediate hosts for other species. The immature tapeworm exists as a bladder-worm in the tissues of the intermediate host. Dogs become infested by swallowing infested fleas and lice or by eating the carcasses of animals whose tissues contain the bladder-worms.

Dogs infested with worms exhibit a variety of symptoms, depending on the types of worms present and the severity of the infestation. Young puppies suffer more than mature dogs. The symptoms are often of a general nature such as vomiting, digestive upsets, restlessness, diarrhea, and dull lusterless coat. Unthriftiness, loss of weight or failure to gain normally are common signs. Hookworms are bloodsuckers and produce anemia which is evident by pale gums and other mucous membranes. In severe infestations there is a bloody diarrhea.

PREVENTION

Cleanliness, sanitation, disinfection and isolation are important preventive measures, but under practical conditions it is often impossible to control worm infestations by such means.

TREATMENT

Tetrachlorethylene has long been recognized as highly effective for the elimination of Large Roundworms and Hookworms. Arecoline Hydrobromide is effective for removing the more common species of Tapeworms. This drug is also a strong purgative, producing bowel movement within a few minutes to an hour. Globe Dog Kaps combine these two drugs for effective removal of all three types of worms.

GLOBE DOG KAPS

CODE WORD:

- Package of 100 CapsulesTABFUL
- Package of 12 CapsulesTABS

GLOBE PINE DISINFECTANT

An Aromatic, Disinfectant and Deodorant Concentrate, with a refreshing pine odor. Compounded Especially for Dog Sanitation. Mixes readily with water to form a permanent white emulsion when diluted for use.

For Dog's Bath—Add two to four tablespoonfuls to each gallon of bath water. Helps

overcome objectionable dog odors; soothing to minor skin irritations caused by insect bites.

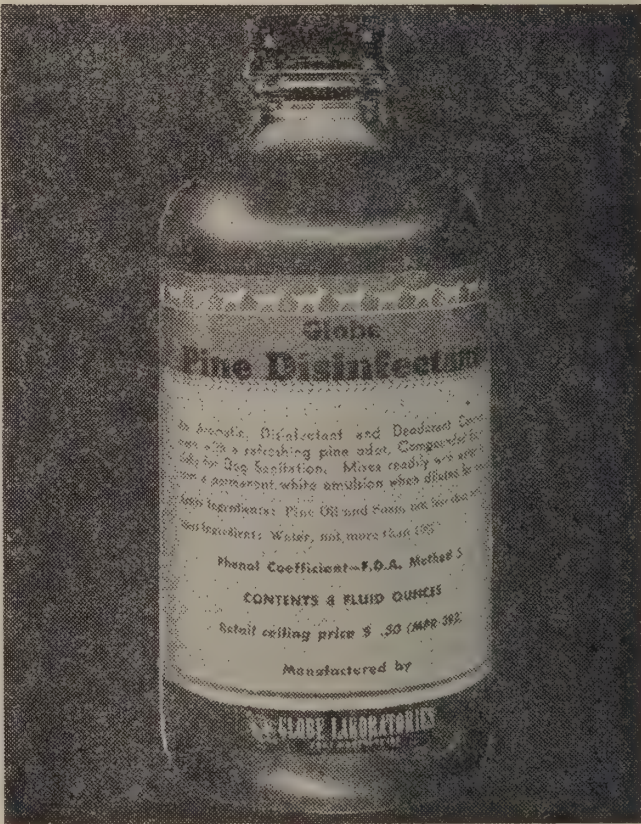
Fleas on Dogs—With soap and water work up a good lather around the dog's neck to prevent fleas from escaping to the head. Then wash the entire body thoroughly with soap and water.

Add 6 tablespoonfuls of GLOBE PINE DISINFECTANT to each gallon of rinse water and soak the animal thoroughly in this solution. Repeat when necessary.

Superficial Cuts and Wounds—Clip hair around the wound and cleanse with soap and water. Bathe affected areas for at least five minutes with one part GLOBE PINE DISINFECTANT in 40 parts water.

General Disinfectant and Deodorant—For kennels, runways, bedding, food and water containers—Surface areas to be disinfected should first be thoroughly cleaned. Then spray or scrub with one part GLOBE PINE DISINFECTANT to 40 parts water. Food and water containers should be rinsed before use.

GLOBE PINE DISINFECTANT



CODE WORD:

- 8-Ounce BottlePINE

GLOBE MIXED BACTERIN (CANINE)
FORMULA 1

Formula: 40% Brucella bronchiseptica, 20% Pasteurella caniseptica, 20% Staphylococcus albus and aureus (10% each), 20% Streptococcus (pyogenic).

A suggested aid in the prevention of conditions due to the organisms mentioned in the formula, which were obtained from the tissues of dogs.

Dose: For prevention: Dogs, 2 c. c. injected into the muscle. Healthy dogs in affected groups, 4 c. c., repeated at 48-hour intervals as needed.

CODE WORD:

50-c. c. PackageCANBACTO
25-c. c. PackageCANBAC

RABBITS

GLOBE MIXED BACTERIN (LEPINE)
FORMULA 1

A suggested aid in preventing those conditions attributed to the organisms listed in the formula which were isolated from the tissues of rabbits.

CODE WORD:

50-c.c. PackageLEPI
25-c. c. PackageLEPINE

EAR CANKER

For treatment of Ear Canker (Ear Mange) in rabbits, see "Globe Ear Canker Emulsion," page 77.



POULTRY SECTION

POULTRY MANAGEMENT AND HYGIENE

In raising poultry, whether it be in small or commercial flocks, sanitation and hygiene are of primary importance if the enterprise is to be successful. There are no fixed rules of sanitation, and sanitary procedures must be selected wisely according to the particular circumstances under which they are expected to produce results. Nature never intended that birds should be raised under such crowded conditions as are required by modern poultry husbandry. The disease hazards are increased in direct proportion to the number of birds in a given area. Consequently, sanitation or, in other words, all those things which we can do to promote and maintain a healthy environment must be followed in order to keep disease under control.

In preparation of the brooder houses for receiving a new batch of chickens, thoroughly clean and disinfect the house and burn all trash and old litter. If possible, move the house to clean ground that has not been used for chickens or which has been plowed and cultivated since chickens last ranged on it. The temperature regulator in the brooder should be adjusted and known to be in proper working order before the chicks arrive. The usual

brooding temperature is 95° F. for day-old chicks, with a gradual drop amounting to about 5° each week until approximately 70° F. is reached.

Clean chicks should be obtained from well bred flocks of known high production and freedom from disease. Plenty of feed and water should be available at all times and the water should be changed frequently. Young birds should be kept separate from mature birds since the latter may be carriers of disease organisms. Chicks should be taught to roost early in life.

Poultry houses should be well ventilated without exposing the birds to direct drafts. They should be dry, clean, and provide adequate space for the number of birds to be housed. The droppings boards or droppings pit should be screened off so birds will not have access to the droppings. Feed and water containers should be constructed or located in such a way that the feed and water can not easily become contaminated with the droppings.

DRINKING WATER SANITATION

In spite of the frequent cleaning and disinfection of water fountains and frequent changing of the water itself, some contamination is unavoidable. This is especially true when chickens are affected with any of the respiratory diseases in which the infectious agents may be eliminated thru the nasal discharges. These discharges contaminate the water and disease spreads readily thru the water. Much attention has been given recently to the use of a new type disinfectant, known as quaternary ammonium compound, for sanitizing the drinking water. Either Globe Poultry Disinfectant or Globe Kome-Glo may be used for this purpose. They are recommended for continuous use in the drinking water of chickens and turkeys to help prevent contaminated water from spreading disease from one bird to another. This preparation is odorless, tasteless, non-toxic, non-corrosive, and can be used in any kind of drinking vessel.

GLOBE POULTRY DISINFECTANT

Contains Quaternary Ammonium Compound. Recommended for all poultry and turkey disinfection needs, including general



disinfection, disinfection of houses and equipment that may be contaminated with the virus of Newcastle Disease, disinfection of hatching eggs, and for use in the drinking water as a sanitizing agent. Odorless, non-corrosive, non-irritating.

Code Word:

1 Gallon	PODGAL
Quart	PODQT
Pint	PODPIT
8 Ounces	PODOZ

GLOBE KOME-GLO

(New and Improved Formula)

CODE WORD:

1 Gallon	KOMEGAL
32 Ounces	KOMEQT
16 Ounces	KOMEPT
8 Ounces	KOME

NUTRITIONAL DISEASES

The nutritional requirements of chickens and turkeys are quite complex and very extensive research work in poultry nutrition has been and still is being done. Nutritional diseases are not very common these days because most poultry are raised and maintained on commercial feeds, which contain all the essential vitamins, minerals, proteins, etc., for normal growth and production. Occasional nutritional diseases are seen in individual birds and groups of birds whose requirement for some mineral or vitamin is much higher than the average bird, or in chickens and turkeys which, for some unknown reason, are unable to absorb or utilize all of the nutritional elements which they take in with the feed.

NUTRITIONAL ROUP

(Avitaminosis A)

CAUSE

A deficiency of Vitamin A, a substance which is derived mainly from green feed and fish liver oils.

SYMPTOMS

In young chicks suffering from Vitamin A deficiency, there is cessation of growth, drowsiness, weakness, staggy gait, and roughened feathers. The comb and wattles become pale, indicating impoverishment of the blood. The yellow pigment normally present in the shanks and beaks is bleached out. There is watery discharge from the eyes which may gum the

eyelids and eventually a cheesy material collects beneath the lids.

In adult birds, the outstanding symptoms are loss of weight in spite of a good appetite, weakness, decrease in egg production, a discharge from the eyes and nostrils, and the accumulation of cheesy material in the eyes. This cheesy material is always white in color and practically odorless. These characteristics help to differentiate the disease from Bacterial Roup, in which the cheesy matter is yellow and the eye and nasal discharges have a particularly offensive odor.

LESIONS

The outstanding lesion of Nutritional Roup is the occurrence of small white pustules in the lining of the gullet. The kidneys may be pale and present numerous fine white lines on their surfaces. White powdery deposits are sometimes seen on the heart, liver, and other organs.

PREVENTION AND TREATMENT

Provide an adequate Vitamin A intake. The two chief sources of Vitamin A are fish liver oils and tender green feed.

RICKETS

Rickets is a deficiency disease primarily of young birds, characterized by failure of the bones to calcify properly. In adults, the bone loses a portion of its mineral and breaks easily. Birds so affected are poor producers.

CAUSE

Rickets may be due to a deficiency of Vitamin D, a deficiency of Calcium or Phosphorus, or improper proportions in the amounts of Calcium and Phosphorus in the ration.

SYMPTOMS

In baby chicks, the outstanding symptoms are weakness, retarded growth, soft bones, and skeletal deformities. In adult birds, the beak is soft, the ribs may become bent and very often the birds lay soft-shelled eggs.

PREVENTION AND TREATMENT

Feed adequate balanced rations at all times. This is most easily accomplished by feeding high quality commercial feeds. Exposure to direct sunlight produces Vitamin D in the body of the chicks. Laying flocks should have constant access to oyster shell as an added source of calcium.

REMARKS

Apparently some birds are unable to utilize the Calcium, Phosphorus, and Vitamin D which they consume in their feed. This is especially true in turkeys. Individual birds and groups of birds have sometimes been known to develop Rickets even when all the anti-rachitic factors were present in optimum amounts.

SLIPPED TENDON
(Perosis)

Slipped Tendon (Perosis) is a deformity of the legs occurring in both chickens and turkeys, and characterized by enlargement and flattening of the hock joints, often resulting in the tendons at the back of the hock slipping to one side or the other, thus causing the shank and foot to turn inward or outward.

CAUSE

Slipped Tendon may be caused by a number of different factors. A deficiency of the mineral Manganese, or a deficiency of Choline (one of the B vitamins) may bring about slipped tendon. An excess of either Calcium or Phosphorus in the ration is another contributing factor. There is no satisfactory treatment for affected birds, since the anatomical defect is a permanent one. Chickens may hatch with this deformity already started if the hens which produced the hatching eggs were on a deficient diet.

PREVENTION

Slipped Tendon may be prevented in the great majority of cases by feeding rations which are complete and properly balanced. Globe Poultry Mineral Tablets may be used in the drinking water as a supplementary source of Manganese. A very limited number of slipped tendon cases occur even in flocks where all the known nutrients are provided in optimum quantities. It is suspected that this small residual number of cases may be due to a deficiency of some nutrient which has not yet been discovered.

POULTRY MINERAL TABLETS

	CODE WORD:
Bottle of 1,000 Tablets	MINLAK
Bottle of 500 Tablets	MINSEE
Bottle of 100 Tablets	MINTAB

BACTERIAL DISEASES
BOTULISM
(Limberneck)

A disease of chickens, turkeys, wild birds, and other animals caused by a bacterial toxin.

CAUSE

The Toxin which produces the disease is secreted by a bacterium, Clostridium botulinus. The disease develops as a result of eating feed or other material in which the toxin is present. The organism is widely distributed in the soil and under ordinary circumstances does no harm. Under favorable conditions of moisture and temperature it multiplies and secretes a toxin or poison. Decomposing carcasses of birds, rabbits, rats, etc., constitute one of the most common sources of the disease in chickens and turkeys. Any form of decomposing matter, such as vegetation, damp moldy feed, manure piles, and accumulations of droppings are potential sources of botulism. Any material in which maggots are found is dangerous for fly maggots develop in decomposing materials where conditions are ideal for the botulinus germ. Furthermore, chickens and turkeys are fond of maggots and eat them readily. Spoiled canned foods sometimes produce botulism.

SYMPTOMS

The toxin affects the nerves, producing paralysis. The legs and wings are first affected, later the neck and entire body. Mild cases may recover following 2 or 3 days of drowsiness and partial leg paralysis. In the advanced stages paralysis is complete. Convulsions, loose feathers, dark comb and diarrhea are often noted.

PREVENTION AND TREATMENT

Screen the droppings boards, control flies and avoid all possible sources of botulism described under "Cause." In an outbreak confine the flock until the cause has been found and

eliminated. Give a dose of Epsom salts, one pound for each 100 adult birds, dissolved in as much water as they will drink in four or five hours. If necessary, move to clean, dry range. Injections of Botulinus Antitoxin may help save some birds provided the disease is not too far advanced.

FOWL CHOLERA

Fowl Cholera is a contagious disease of chickens and turkeys producing hemorrhages in various tissues and usually accompanied by a high mortality.

CAUSE

Pasteurella avisepticus, one of the Hemorrhagic Septicemia organisms. Once this disease finds its way into the flock, it may spread from bird to bird through contamination of the feed and water, contaminated soil, and failure to remove the carcasses of dead birds.

SYMPTOMS

In the most acute form of the disease, symptoms may not be seen. Birds are found dead under the roosts or on the nests. Where the disease runs a longer course, the combs and wattles turn dark, a diarrhea may be present, which in color is greenish, yellowish, or gray, and is generally copious and watery. Death may take place within several hours to a few days. In the chronic form of Fowl Cholera, lameness and swollen wattles are frequent symptoms produced by the organism localizing in the joints and the face parts. The latter cases frequently terminate in a roup-like condition.

LESIONS

The most common lesion in Fowl Cholera is the occurrence of bright red pin-point hemorrhages most frequently in the band of fat around the heart, but sometimes also in the gizzard, the intestines, and other tissues. Sometimes there is a yellowish cheesy exudate in the abdominal cavity. The liver is nearly always dark, swollen, and congested. In acute cases, the lungs also are dark and engorged with blood.

TREATMENT

Treatment of affected birds is usually not successful because the disease is very acute in the majority of outbreaks.

PREVENTION AND CONTROL

Preventive measures consist in vaccinating all susceptible birds with *Avissepticus-Gallinarum* Bacterin (Fowl Cholera-Typhoid) and maintaining sanitation. Since Cholera and Typhoid have many points in common, which may lead to confusion in the absence of a laboratory diagnosis, it is better to use the combination bacterin than a straight Cholera or a straight Typhoid product. Isolate all affected birds and dispose of dead birds by burning or burying. Vaccinate all healthy birds in affected flocks with a double dose of Bacterin.

AVISEPTICUS-GALLINARUM BACTERIN (Whole Culture) (Fowl-Cholera-Typhoid)

For the prevention of Fowl Cholera and Fowl Typhoid in chickens and turkeys.

Dose: Non-affected flocks, Chickens 1 c. c., Turkeys and other large fowls, 2 c. c., injected into the breast muscle. Non-affected birds in affected flocks: Chickens 2 c. c.; Turkeys and other large fowls 4 c. c., repeated at 48-hour intervals as needed.

CODE WORD:	
250-c.c. Package	COLFUL
125-c. c. Package	COLOID
60-c. c. Package	COLTYE

FOWL TYPHOID

Fowl Typhoid is an acute septicemic disease of both chickens and turkeys, characterized usually by high mortality. It is most commonly a disease of young adults, although growing birds and occasionally baby chicks and poults are affected.

SYMPTOMS

One of the most constant symptoms is a yellowish or greenish diarrhea. There is intense thirst, probably a result of fever, and affected birds appear listless. Loss of weight

and general emaciation occur if the course of the disease is long. The comb and wattles are usually pale, not dark and congested as in cholera.

LESIONS

On post-mortem examination one or more of the following lesions will be seen: The liver is swollen, congested and soft and may vary in color from a greenish to brown. Sometimes light areas of necrotic tissue are seen on the surface. The gall bladder is distended. The contents of the small intestine are slimy and stained green with bile. Hemorrhages may occur in the mucous membrane. The heart often exhibits diffuse gray areas on its surface. The lesions in baby chicks and poults resemble very closely those found in pullorum disease.

DIAGNOSIS

Typhoid may sometimes be confused with cholera, although in many cases petechial hemorrhages, congestion of the lungs, and dark comb in cases of cholera may help to differentiate these diseases.

PREVENTION

Prevention of Fowl Typhoid is dependent upon strict sanitation and vaccination of all susceptible birds with *Avisepticus-Gallinarum* Bacterin.

CONTROL OF AN OUTBREAK

Isolate all affected birds to help limit spread of the disease. Vaccinate all healthy-appearing birds in the flock with a double dose of *Avisepticus-Gallinarum* Bacterin. Since the infection is spread largely by way of the droppings, a complete disinfection of the premises, including all utensils and equipment, is essential.

REMARKS

Vaccination with *Avisepticus-Gallinarum* Bacterin produces a positive reaction to the Pullorum test. Birds that have been vaccinated with this product should not be tested for at least 60 days and longer if necessary for the false reaction to disappear.

AVISEPTICUS-GALLINARUM BACTERIN (Fowl-Cholera-Typhoid)

See Page 87



INFECTIOUS CORYZA (Colds and Roup)

Infectious Coryza is a particular type of cold in chickens caused by a bacterium, "*Hemophilus gallinarum*." This disease does not ordinarily affect turkeys.

SYMPTOMS

In mild outbreaks there may be no symptoms other than a slight nasal discharge and the disease is of short duration. However, there are all degrees of infectious coryza varying from mild to extremely severe. In severe cases there is a nasal discharge, coughing, sneezing, swellings of the face and wattles, inflammation of the eye, loss of appetite and emaciation. Egg production usually falls to a low level. The course of the disease may be prolonged and, although death losses are not high as a general rule, the monetary losses resulting from decreased egg production and failure to gain are of considerable economic significance to the poultryman.

PREVENTION

Avoid contact with birds from affected flocks and practice strict sanitation at all times. Young stock should be reared apart from old birds since adults are sometimes carriers and may serve to spread the disease to younger chickens with which they come in contact.

Damp or drafty houses, crowding, and insufficient ventilation are important predisposing causes and should be avoided. Provide plenty of Vitamin A, either as green feed or by the addition of fish liver oil.

TREATMENT

Globe Cole-Ade, which combines the therapeutic properties of sulfathiazole with "stomachic" drugs is recommended for use in the mash to help control outbreaks of Infectious Coryza. Best results are obtained when treatment is started early in the course of the outbreak before many birds have become affected.

Cull all affected chickens and treat them in isolation apart from the rest of the flock.

To prevent spread of the disease among those birds not already stricken, mix 10 ounces of Globe Cole-Ade with 50 pounds of mash and feed only this medicated mash for three to five days, or for at least three days after no new cases have appeared. Use Globe Poultry Disinfectant in the drinking water to help prevent spread of the disease through this medium.

Affected birds in isolated quarters should receive Cole-Ade in the mash until symptoms have subsided. For treatment of sick birds, mix one part by weight of Cole-Ade with 20 parts by weight of dry mash. Birds that recover (if only a small percentage of the flock) should be marketed for meat. Recovered birds are often carriers of the disease and if returned to the flock they might start another outbreak. Not all affected birds respond to this treatment, especially those that have been ill a long time and are markedly off feed.

Spraying the flock two or three times daily with Globe Poultry Spray will help loosen accumulated mucus in the nostrils and throat. If the flock is not on green range, sprinkle a little cod liver oil on the feed as an added source of Vitamin A.

REMARKS

Coryza or colds due to causes other than Hemophilus gallinarum may fail to respond to

treatment. The condition known as Bacterial Roup is often the result of secondary infections following coryza. Vitamin A deficiency may be a predisposing cause. In addition to the usual cold symptoms, one or both eyes may become swollen and filled with a yellow cheesy material which has an offensive odor. Bacterial factors associated with Roup include the following: Pasteurella aviseptica, Staphylococcus aureus, Staphylococcus albus, Streptococcus (non-hemolytic), and Pseudomonas aeruginosa.

Preventive and sanitary measures should be instituted when cold symptoms are first noticed. If the disease is allowed to spread throughout the flock or to reach the "Roup" stage, treatment is often disappointing.

GLOBE COLE-ADE

CODE WORD:

- 10-Ounce PackageCOLD
- 4-Ounce PackageCOLDAD

GLOBE POULTRY SPRAY

CODE WORD:

- 1-Gallon BottleSPRAFUL
- 32-Ounce BottleSPRAQT
- 8-Ounce BottleSPRA

GLOBE POULTRY DISINFECTANT

See Page 84

PARATYPHOID

Paratyphoid is an intestinal infection of both chickens and turkeys, in most cases affecting young birds up to five weeks of age.

CAUSE

Salmonella Typhimurium is the organism most commonly found in outbreaks of this disease, but there are over thirty closely-related species of the Salmonella group which may be involved.

SYMPTOMS AND LESIONS

Symptoms and post-mortem findings in cases of paratyphoid are quite variable and resemble other diseases so closely that diagnosis is difficult except on the basis of a bacteriological test.

In chickens the liver is enlarged and shows light-colored necrotic spots in a high percentage of cases. Nodules resembling those seen in pullorum disease may occur in the lungs. Diarrhea is a common symptom, but does not occur in all cases.

Paratyphoid is more common and much more serious in turkeys than in chickens. Affected poults become weak and thin. There may or may not be a diarrhea. Sometimes the liver presents a mottled, yellowish appearance, and cheesy cores are sometimes found in the ceca. The mortality in different outbreaks ranges from 10% to 90%.

PREVENTION

Since the perpetuation of this disease seems to be dependent on the existence of healthy carriers among adult birds, much effort has been directed toward the development of a test which would detect these carrier birds. Thus far no highly reliable test has come to light. Young stock should be raised in clean quarters and on clean ranges, apart from adult birds. Vaccination of healthy birds with Gallinarum-Typhimurium Bacterin is recommended to increase the body resistance to the organisms listed in the formula. Vaccination of very young poults and chickens in areas where the disease occurs repeatedly is often practiced, but it must be remembered that very young birds do not immunize easily, nor maintain their immunity very long.

GALLINARUM-TYPHIMURIUM
BACTERIN (Whole Culture)

CODE WORD:

250-c. c. Package	TYFUL
125-c. c. Package	TYMED
60-c. c. Package	TYBAC

PULLORUM DISEASE

Pullorum Disease is an acute bacterial infection seen most commonly in baby chicks and poults.

CAUSE

Salmonella pullorum, a bacterium which localizes in the ovaries of affected hens without producing any visible symptoms. It is estimated that about 10% of the eggs laid by affected hens carry the pullorum organism. Chicks hatched from these infected eggs are likewise infected. They spread the disease to healthy chicks in the same brood. The mortality rate is usually very high but frequently some birds recover, only to perpetuate the disease through contact with healthy birds and through the production of infected eggs.

SYMPTOMS

Affected chicks appear sleepy and weak. There is a complete loss of appetite, a whitish diarrhea which soon pastes up the vent, and very often gasping for breath. The mortality

may vary from zero to 100%. The outbreak usually reaches its peak during the second week followed by a rapid decline in losses during the succeeding weeks.

LESIONS

Lesions found in young chicks and poults on post-mortem examination are extremely variable. Some show no lesions whatsoever, others may show one or more of the following: enlarged liver presenting light pin-point spots on its surface, light colored areas in the heart muscle and gizzard, yellowish nodules or patches in the lungs, spleen enlarged, firm cheesy cores in the ceca. This disease may often be suspected from the symptoms and history as well as post-mortem findings, but a definite diagnosis can be made only by isolation and identification of the pullorum organism.

CONTROL

Control of Pullorum Disease is based primarily on the following: repeated blood testing of all breeding flocks with Pullorum Antigen and elimination of the reactors, disinfection of the premises, good sanitation and management, including hatchery sanitation and disinfection and fumigation of incubators. In outbreaks occurring in baby chicks and poults, it is best to destroy and burn all sick birds as soon as symptoms are noted. Strict sanitation with particular reference to the feed, water, and litter may help to limit the spread of the disease.

PULLORUM ANTIGEN
Pullorum (Disease) Stained Antigen T G

For blood-testing chickens by the rapid plate method to detect Pullorum Disease.

CODE WORD:

- Package of 2,500 TestsBWDMMV
- Package of 1,000 TestsBWDM
- Package of 500 TestsBWDFUL
- Package of 100 TestsBWDA

TUBERCULOSIS

Avian Tuberculosis is a chronic, contagious disease of chickens and occasionally of turkeys. Although the infection may be contracted early in life, manifestations of the disease are seldom seen until the birds approach or reach maturity. Loss of weight in spite of a good appetite, emaciation, anemia, lameness and paralysis are the outstanding symptoms.

Irregular grayish-yellow nodules of varying size are found in the liver, spleen and intestines. Since there is no sure means of preventing tuberculosis and no method of treatment, it is advisable, on premises where the disease exists, to market all laying flocks after their first year of production. New stock, from tuberculosis-free flocks, should be reared apart from other birds, using houses and equipment that have been thoroughly cleaned and disinfected. In areas where Avian Tuberculosis is common, chickens and swine should not be permitted to mingle, since swine are susceptible to Avian Tuberculosis and very frequently contract this disease from chickens.

ASPERGILLOSIS
(Brooder Pneumonia)

Aspergillosis is an infectious disease of the respiratory system caused by a variety of fungus or mold-like organisms which are widely distributed in nature. Both chickens and turkeys may be affected.

SYMPTOMS AND LESIONS

Affected birds breathe rapidly and with some difficulty. There is usually a loss of appetite and eventually emaciation. On post-mortem examination the lungs and air sacs are found to contain light-colored nodules varying in size from a pin head to a quarter of an inch in diameter.

TREATMENT

There is no satisfactory and effective treatment for Aspergillosis. Affected birds should be destroyed.

PREVENTION

Avoid moldy feed and litter and also wet, damp surroundings.

MYCOSIS OF THE CROP

This is a fungus infection of the crop affecting both chickens and turkeys and caused by several species of molds or fungi commonly associated with unsanitary and damp surroundings. Young birds appear to be mostly susceptible.

SYMPTOMS AND LESIONS

There are no specific symptoms, affected birds appearing listless, droopy, and failing to gain normally. On opening the crop of affected birds, irregular, whitish patches are noted in the lining. This is due to growth of the mold or fungus within the tissue.

TREATMENT

Add one level teaspoonful of Copper Sulfate to each two gallons of drinking water for three or four days. No other source of drinking water should be available. Then provide clean, fresh, untreated water for three or four days, and repeat this intermittent treatment until recovery takes place.

PREVENTION

Prevention is based entirely on sanitation. Avoid wet, damp litter and wet areas in the pen and on range. Damp or moldy feed may be another source of the infection. Use Poultry Mineral Tablets in the drinking water, one tablet per gallon. Globe Poultry Mineral Tablets . . . See page 86.

FOWL POX (Sore Head)

Fowl Pox is an infectious disease of chickens and turkeys caused by a filterable virus and characterized by sores on the unfeathered parts of the head. The disease is widespread, occurring practically everywhere that poultry is raised. Fowl Pox occurs principally in the late summer, fall and early winter. Birds of all ages are susceptible but outbreaks are seen most frequently in young adults. Fowl Pox is transmitted only by introduction of the virus through the broken skin or mucous membranes of the head. Mosquitoes transmit the disease readily and may carry it from an infected flock to a non-infected flock.

SYMPTOMS AND LESIONS

Typical lesions are wart-like growths on the comb and wattles. Frequently there are cankers in the mouth and at the top of the windpipe. This type of infection is often referred to as diphtheria or "wet pox." Rarely do pox lesions occur on the feet, legs, and body. They sometimes are present in the nasal cavity resulting in roup. The disease runs its course in four to six weeks in the individual bird, but may be prolonged if complications ensue.

TREATMENT AND PREVENTION

Treatment is seldom worth while, but if desired the cankers and scabs may be removed and the raw surface painted with an astringent antiseptic preparation such as Globe Gall Lotion or Tincture of Iodine. Fowl Pox may be prevented almost 100% by vaccinating susceptible birds prior to exposure. The ideal age for vaccination is 8 to 12 weeks. Vaccination should never be delayed until the flock is in production, for vaccination of such flocks is nearly always accompanied by a drop in egg production. A protective degree of immunity is established in about four weeks after vaccination.

Turkeys tend to lose their immunity after several months and, for this reason, turkeys that are retained for breeding should be re-vaccinated in the fall when the balance of the flock is sent to market.

Vaccination of baby chicks from 1 to 4 weeks of age has been accomplished successfully in some cases but is attended by considerable risk and therefore is not generally recommended. In vaccinating with Fowl Pox Vaccine the operator should use precautions to avoid getting the virus on the feathers, around the head, or on the premises, for if the virus is scattered freely it may produce a natural outbreak of the disease.

Birds may be vaccinated by the Follicle or by the Stick Method. The Follicle Method involves plucking a few feathers from the side of the drumstick and applying the vaccine to the open feather follicles with a brush. With the "Stick" method, a sharp instrument is dipped into the vaccine and then used to stick or puncture the skin. Always follow

closely the directions which accompany each package.

GLOBE FOWL-POX VACCINE (Chick Embryo Origin)

For the prevention of Fowl Pox (Sore-head) in chickens and turkeys.

CODE WORD:
500-Dose PackagePOXFUL
100-Dose PackagePOXMED

GLOBE GALL LOTION See Page 73

INFECTIOUS BRONCHITIS

Infectious Bronchitis is an acute contagious disease of baby chicks, principally those under four weeks of age, but occasionally attacking older birds in a mild form. This disease is caused by a filterable virus which may be spread by direct or indirect contact.

SYMPTOMS

Gasping, coughing, and crackling sounds are made by affected chicks. There is a watery nasal discharge sometimes accompanied by swollen sinuses. The disease spreads with extreme rapidity and the mortality may vary from 25% to 90%.

LESIONS

On post-mortem examination the lungs are found to be congested and there is an accumulation of mucus in the larynx, windpipe, air sacs, and the air passages of the lungs.

PREVENTION

Infectious Bronchitis can be prevented only through isolation, disinfection, sanitation and good management. New stock should always be obtained from sources known to be free of the disease. There is no satisfactory method of immunizing susceptible young birds and there is no effective treatment for birds affected with this disease.

In outbreaks involving poultry plants that brood continuously, it is often necessary to depopulate the entire premises of chickens, then thoroughly clean and disinfect the premises before operations are resumed with disease-free chicks.

LARYNGOTRACHEITIS

Laryngotracheitis is an acute respiratory disease of chickens of all ages, occurring most commonly in young adults. Turkeys are not affected.

CAUSE

A filterable virus which spreads readily from bird to bird. The virus is killed rather easily with ordinary disinfectants and is generally believed not to survive on premises and equipment from season to season. Recovered birds are often carriers of the infection and serve to perpetuate it from year to year.

SYMPTOMS

Symptoms vary with the severity of the attack and may include gasping, coughing, wheezing, gurgling, and rattling in the throat. In severe attacks the neck is extended upward and the beak opened wide at each breath. Onset of the disease is sudden and it spreads rapidly. Egg production is lowered during an outbreak and sometimes for several weeks afterward. The mortality varies from 5% to 60%.

LESIONS

On post-mortem examination there is inflammation of the larynx and windpipe which usually contains blood-tinged mucus, blood clots, or a dense cheesy material. Death from suffocation follows complete blocking of the windpipe.

PREVENTION

Separate young birds from old stock and practice sound hygienic methods. Sanitation and quarantine are helpful preventive measures.

Susceptible birds in flocks in localities where the disease is prevalent or has occurred before may be satisfactorily immunized by vaccinating with Laryngotracheitis Vaccine. This vaccine contains a live, virulent virus and should be used cautiously by persons familiar with the hazards involved.

REMARKS

Laryngotracheitis may be confused with Newcastle Disease, Infectious Bronchitis, and Acute Infectious Coryza.

LEUCOSIS (Fowl Paralysis)

Leucosis is a disease or group of diseases affecting chickens but not turkeys and believed to be due to a filterable virus. The disease usually spreads slowly in a flock and ordinarily only a few birds show symptoms at any one time.

SYMPTOMS

There are three chief types of Leucosis based on the character of the symptoms. (1) The paralytic form often referred to as Fowl Paralysis or Range Paralysis. Any part of the body may be paralyzed but most frequently affected are the legs, wings, and neck. (2) The ocular form of Leucosis often referred to as "pearly eye" or "grey eye." This type is characterized by a discoloration of the eye which loses its bright bay hue and assumes a bluish or greyish cast. At the same time the pupil becomes constricted and irregular. The bird eventually becomes blind. (3) The visceral or tumor form of Leucosis often referred to as Big Liver Disease. This form is characterized by the appearance of lymphoid tumors which may occur in any part of the body but most frequently in the liver and other internal organs. The tumors are light in color and on being cut appear to have a consistency similar to fat. The liver may be several times its normal size.

CONTROL

There is no treatment for Fowl Leucosis. The course of the disease is chronic, but all affected birds die sooner or later. Leucosis occurs in practically all the poultry-raising sections of this country, and there are few flocks that have not experienced some losses from this cause. As helpful control measures it is recommended that the flock be culled continuously and birds removed at the earliest sign of paralysis, grey eyes, "going light" or anemia. If in good flesh and otherwise normal these birds may be marketed for meat. It is

highly important to control external parasites, especially mites and blue bugs, which are blood suckers and may possibly spread the disease from bird to bird in the flock (see page 101, Carbo-Col). Strict sanitation should be practiced at all times. Balanced, adequate rations should be fed and internal parasites should be controlled so as to keep the natural resistance of the flock at the highest possible level (see page 99).

NEWCASTLE DISEASE

Newcastle Disease was identified in England in 1927. It has been present in the state of California for many years where it was first called "Pneumoencephalitis." In 1944 it was discovered that Newcastle Disease and Pneumoencephalitis were caused by the same filterable virus.

In this country Newcastle Disease has been mild and the mortality low as compared to the disease as it occurs in other countries.

National interest in Newcastle Disease in the past few years has led to the discovery of its existence to a greater or less degree in nearly all the poultry sections of the country.

Newcastle Disease may be confused with Laryngotracheitis, Bronchitis, or Coryza. In typical cases of Newcastle Disease gasping and other respiratory symptoms are followed by nervous disorders such as circling, walking backwards, twisted neck, tremors, convulsions, and paralysis. When both respiratory and nervous symptoms are observed in the same flock there is good reason to suspect Newcastle Disease. Diagnosis is difficult and only specially equipped laboratories are qualified to make a definite diagnosis. The livestock sanitary officials in your state or the State Agricultural College should be consulted regarding laboratory diagnosis.

Newcastle Vaccine has been used extensively for prevention of the disease and is apparently very effective.

Strict sanitation and quarantine are strongly advised to prevent introduction of the disease into the flock.

PROTOZOAN DISEASES

BLACKHEAD

(Infectious Enterohepatitis)

Blackhead is a protozoan disease of turkeys characterized by inflammation of the liver and ceca. The disease occurs almost entirely in turkeys. Chickens are often carriers of the infection but seldom contract the disease themselves. Blackhead is transmitted from bird to bird by means of infected droppings and may be picked up on premises where chickens and turkeys have ranged previously. The Blackhead parasite is sometimes present in the cecal worm egg in which it is well protected from sunlight and other adverse influences.

SYMPTOMS

Affected poults are weak, sleepy, and droopy. Usually droppings are fluid and sulphur colored. The head is lowered and the feathers ruffled. The mortality is high, especially in young birds, greatest losses occurring during the first three months of life.

LESIONS

On post-mortem examination of poults affected with Blackhead one or both of the following characteristic lesions are noted: Light colored, more or less octagon-shaped, depressed areas of dead tissue are scattered over the surface of the liver. One or both ceca may be tremendously enlarged, ulcerated, and filled with firm, cheesy material.

TREATMENT

There is no known treatment which is effective for Blackhead.

PREVENTION AND CONTROL

Since Blackhead occurs commonly wherever turkeys are raised, preventive measures are of the utmost importance. Sanitary methods of feeding and watering, raising birds on clean range, and frequent rotation of range, will aid materially in preventing a serious outbreak. In some sections of the country young poults are raised entirely on wire floors. Poults should be raised apart from adults. Every effort should

be made to eliminate the cecal worm (see page 99) which helps to perpetuate Blackhead disease.

COCCIDIOSIS

Cecal or bloody coccidiosis is a disease primarily of young growing chicks from 3 to 8 weeks of age. Birds of other ages are sometimes affected with cecal coccidiosis, but as a general rule, coccidiosis in older birds is one of the intestinal types which are separate and distinct diseases. Coccidiosis of turkeys is not the same disease as cecal coccidiosis and is not transmissible to chickens. Likewise, coccidiosis of chickens cannot be transmitted to turkeys. Of the several types of coccidiosis which affect chickens, cecal coccidiosis is by far the most common and the most costly.

CAUSE OF THE DISEASE

Cecal coccidiosis of chickens is caused by a specific protozoan parasite or germ known as *Eimeria tenella*. The development and multiplication of the germ follows a definite pattern requiring approximately 8 days for the completion of the life cycle. During this period, the germ passes thru eight separate stages of development, and at the same time undergoes tremendous multiplication in the intestine of the affected chick. Chicks become infected by picking up the coccidia germs (at this stage known as sporulated oocysts) from the ground,



the litter, or from infected droppings. During the first 4 days after infection, the germs multiply in the lining membrane of the ceca or blind guts. On the fifth day, a stage of development is reached which results in the formation of large packets of germs which have invaded the deep layers of the walls of the ceca. At this time, the heavily invaded walls of the ceca are ruptured at innumerable points from the pressure of the invading coccidia. It is at this time, approximately 5 days after infection takes place that hemorrhage occurs in the ceca, and blood first appears in the droppings. Most deaths from coccidiosis occur at this time as a result of severe hemorrhage. Not all infected birds die, and in those which survive, the coccidia germs pass thru two other stages of development to complete the life cycle. The mature coccidia germs, known as oocysts, complete their development in 7 or 8 days after infection and may continue to be passed in the droppings of surviving birds for many months thereafter. Coccidia germs are extremely resistant and are able to survive for long periods of time in the soil and litter. They are not killed by most of the ordinary disinfectants in the strengths generally employed for disinfection.

SOURCE OF INFECTION

The coccidiosis germ is nearly always present wherever chickens have been raised for any considerable period of time. Since the disease is a common one, and since recovered birds spread the infection in their droppings for many months, the soil in chicken yards and ranges, where the disease has occurred previously, is usually contaminated. The germs may be carried mechanically from infected to non-infected premises on the shoes, on feed sacks, by wild birds, and probably also by rats, mice, and insects.

SYMPTOMS AND LESIONS

In very acute outbreaks, the first symptom of cecal coccidiosis is the appearance of bloody droppings. In less acute outbreaks, it may be noticed that the birds act dull and droopy before the appearance of blood. Affected chicks act sleepy and stand huddled with ruffled feathers and drooping wings. Chicks that are severely affected may die suddenly soon after hemorrhage begins. Those less severely affected may recover but very often they are unthrifty and do not make normal weight gains.

On post-mortem examination of chicks dead of acute cecal coccidiosis, the ceca are greatly distended and filled with blood. The lining membrane is ruptured and ulcerated. All of the organs and tissues are abnormally pale as a

result of severe hemorrhage. In chronic cases, where chicks linger for several days before dying, the ceca usually contain yellowish cheesy cores containing varying amounts of blood and the walls of the ceca are considerably thickened.

IMMUNITY TO COCCIDIOSIS

Chickens that recover from cecal coccidiosis and those that survive a mild infection become immune to the disease in a very short time, and will not contract the disease thereafter even if allowed to run on infected ground.

PREVENTION THRU SANITATION

Cecal coccidiosis can be prevented by the use of rigid sanitary measures that are effective in preventing the germ from getting into the flock. Since the germ must be swallowed by the chicks in order to produce the disease, access to the droppings or to soil or litter which has been used by older birds is attended with considerable danger. Raising chicks on wire floors is one of the most effective measures that can be employed in preventing coccidiosis. This method of raising chickens is impractical except with highly specialized poultry production. Where chicks are raised on litter or run on the ground, cecal coccidiosis often occurs even with the very best sanitary practices such as cleaning and disinfection, range rotation, and screening off the area under the roosts. It is good poultry management to take full advantage of all recognized sanitary procedures in order to prevent, in so far as possible, outbreaks of cecal coccidiosis, as well as other diseases, and to minimize the severity of an outbreak, should one occur. In spite of good sanitary practices, outbreaks of coccidiosis do occur. Furthermore, it is usually impossible to put chickens on ground that has not been used before for other chickens.

PREVENTION BY MEDICATION

Outbreaks of cecal coccidiosis may occur at almost any time in young chickens. However, the greatest danger of an outbreak is during wet weather, and when young chickens are first put on the ground, especially if other birds have been raised before on the same ground. Under these and other conditions where it appears likely that an outbreak may occur, use GLOBE COCCI-ADE for 2 weeks in the drinking water or in the mash (but not in both). Dissolve 4½ level teaspoonfuls of GLOBE COCCI-ADE in each gallon of water, or mix 3 level tablespoonfuls of GLOBE

COCCI-ADE in each 10 pounds of mash. This is equivalent to 5 ounces of **COCCI-ADE** in 55 pounds of mash. This medication will help to prevent an outbreak even though the flock is picking up some infection, and birds which do pick up the infection during the medication period may be expected to develop some degree of immunity.

CONTROLLING AN OUTBREAK BY MEDICATION

Immediately upon the appearance of the first symptoms of cecal *coccidiosis* (usually bloody droppings), start medication of the entire flock with **GLOBE COCCI-ADE**. **GLOBE COCCI-ADE** may be used either in the drinking water or in the mash (but not in both at the same time). A larger dosage is required for controlling than for preventing an outbreak. In controlling an outbreak by medication of the drinking water, add $2\frac{2}{3}$ level tablespoonfuls of **GLOBE COCCI-ADE** to each gallon of water and stir until dissolved. In controlling an outbreak with **GLOBE COCCI-ADE** in the mash, add $6\frac{2}{3}$ level tablespoonfuls of **GLOBE COCCI-ADE** to each 10 pounds of mash. This is equivalent to 5 ounces of **GLOBE COCCI-ADE** in 25 pounds of mash. Mix thoroughly until the drug is evenly distributed throughout the feed. Give medicated water or feed for 4 days, followed by plain water or feed for the next 3 days, then give medicated water or feed for 3 days. Birds that pick up the infection during the period of medication may be expected to develop some degree of immunity.

*Always measure the dosage accurately, using a standard kitchen measuring spoon. Fill the spoon loosely with **GLOBE COCCI-ADE**, then scrape off even with the top of the spoon using a knife edge. Do not pack the spoon as this will result in excessive dosage.*

GLOBE COCCI-ADE is effective in preventing mortality in birds that have already been infected as long as 72 hours. No better claim can be made for any *coccidiosis* drugs known today. **COCCI-ADE** is not a treatment for individual birds already showing pronounced symptoms of cecal *coccidiosis*. It is to be expected that some deaths may occur up to 48 hours after medication is started. Few, if any, deaths should occur after this time. It is of the utmost importance to start treatment early before a large number of birds in the flock have already contracted the infection.

Every poultry raiser should constantly be on watch for the appearance of bloody droppings so that medication may be started early and the disease brought under control as quickly as possible.

GLOBE COCCI-ADE

GLOBE COCCI-ADE comes in two sizes. The 5-ounce package provides sufficient medication for the prevention or control of cecal *coccidiosis* in a flock of about 100 2-week old chickens, or 50 4-week old chickens, or 25 8-week old chickens. The 20-ounce package is sufficient for 400 2-week old, 200 4-week old, or 100 8-week old chickens.

HEXAMITIASIS

This disease, known also as Catarrhal Enteritis, and often referred to as "Hexy" is a protozoan disease of young poults producing its greatest mortality in birds under 10 weeks of age.

SYMPTOMS

Affected poults act nervous and appear cold as a result of subnormal body temperature. There is continual chirping, stilted gait, rough feathers and loss of weight. A watery, foamy diarrhea is nearly always present. The disease terminates in convulsions, coma, and death. Losses seldom occur after 8 weeks of age unless there is some other disease or debilitating factor which prolongs the course.

LESIONS

There is nothing specific or constant about the lesions seen in "Hexy." Condition of the bird is usually poor and the skin dry. The contents of the upper intestine are generally watery and foamy, but sometimes they resemble thick mucus. The wall of the intestine is flabby.

TREATMENT

There is no specific treatment for "Hexy." During an outbreak the temperature in the brooder should be increased, the pens dry-cleaned daily, and the flock culled several times a day followed by killing and burning of affected poults. Drinking water antiseptics are, of course, indicated.

PREVENTION

"Hexy" is perpetuated by adult carriers which harbor the organism in the intestine, but are not, themselves, affected by it. Ducks, chickens, partridges, quail and possibly other birds may be carriers. In areas where this disease occurs it is advisable to sell all adult birds at least two weeks before the first poults are hatched. If this plan is incompatible with the scheme of operations, it may be necessary to provide separate units and separate caretakers for the breeding flock and the poults. Under

all circumstances, proper hygiene and sanitation are important control measures.

TRICHOMONIASIS

Trichomoniasis is a protozoan disease of turkeys, very rarely of chickens, producing raised, necrotic ulcers in the lining of the crop.

SYMPTOMS

Turkeys affected with this disease usually lose the appetite, there is drooling of thick, foul-smelling saliva, the feathers are ruffled, the head dark, and there is a depression in the chest due to the crop being empty. The disease runs a slow course and may terminate in emaciation and death.

LESIONS

On opening the crop, raised, necrotic ulcers up to one-half inch in diameter are seen attached to the lining. This necrotic tissue is yellowish in color and has the appearance of being built up from concentric rings to a point in the center.

PREVENTION

Avoid known infected areas where the disease has previously occurred on the range, especially poorly drained pastures and stagnant pools. Any damp areas where grain or vegetation has been trampled and is damp or moldy may be dangerous. Use Globe Poultry Mineral Tablets in the drinking water, one tablet per gallon. Globe Poultry Mineral Tablets. See page 86.

TREATMENT

Add one level teaspoonful of Copper Sulfate to each two gallons of drinking water and feed continuously for four days followed by three days of plain water. It may be necessary to repeat this intermittent treatment two or three times. Turkeys dislike medicated water, and will refuse to drink it if there is any other water available. Access to other sources of water must be prevented.

MISCELLANEOUS CONDITIONS CANNIBALISM

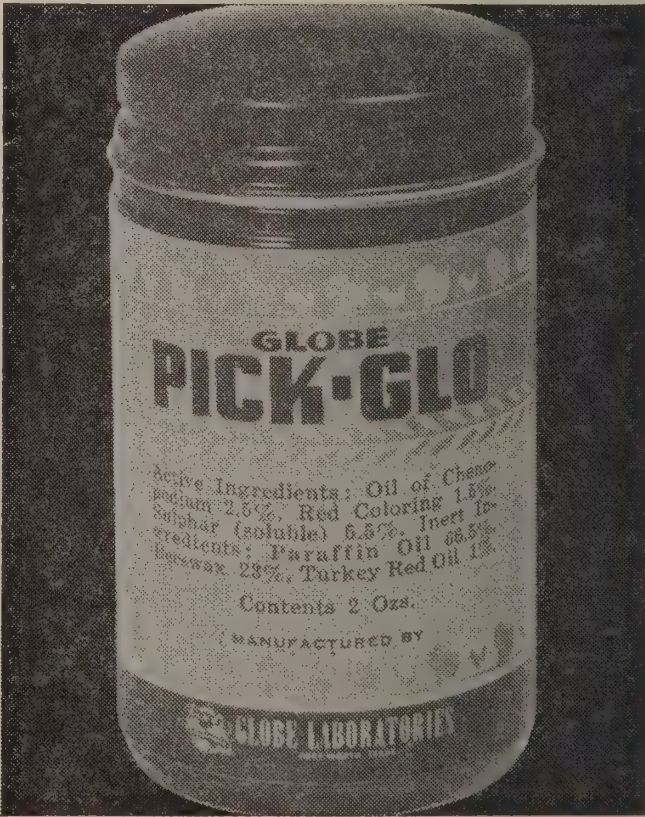
Cannibalism and featherpicking are vicious habits frequently acquired by birds in confinement. Various causes have been suspected, such as overcrowding, overheating, lack of exercise and nutritional deficiencies.

Young chickens are more likely to develop this vice than are mature birds, and death losses are serious if corrective measures are not employed.

Remove all chicks that are observed picking on other birds and place them in isolation; otherwise they will teach the vice to the rest of the flock. Smear Globe Pick-Glo on the feathers and injured tissues of a number of chicks in the pen. Pick-Glo is very bitter and birds that get a taste of it are usually discouraged from further picking.

Other helpful measures include decreasing the light, providing ample space and green feed. A light feeding of whole oats each day appears to be beneficial in some cases. Granite grit must be provided when whole oats are fed. Examine for internal and external parasites and if present take corrective steps. The use of salt in the drinking water is helpful in many cases. One teaspoonful of salt per gallon of water is fed during the forenoon, then replaced with fresh water. The salt treatment may be repeated in three days. Salt must be used cautiously, for excessive amounts are toxic.

GLOBE PICK-GLO



CODE WORD:

15-Ounce JarPIKBIG
2-Ounce JarPIKS

PENDULOUS CROP

This condition, which occurs more commonly in turkeys than in chickens, is a result of weakness of the wall of the crop which becomes greatly distended with fluid and seldom returns to normal size.

Usually the condition first appears with the onset of hot, summer weather when there is a marked increase in water consumption. In severe cases, the crop hangs nearly to the ground and digestion is interfered with, leading to loss of weight and emaciation.

Some cases of Pendulous Crop are believed due to a hereditary weakness. Consequently birds affected with this condition should never be retained as breeders. Mycosis of the crop may be a primary weakening influence in some cases. There is no treatment for this condition that has been recognized as being highly successful. Some turkey raisers believe that 4% vinegar in the drinking water for a period of four days is beneficial.

SINUSITIS

Sinusitis is a disease of turkeys, apparently infectious and contagious, the cause of which has not yet been definitely identified.

SYMPTOMS

The earliest symptoms noted are a nasal discharge and shaking of the head in an effort to dislodge and fling out accumulations of mucus. A soft swelling below and in front of the eyes develops rather rapidly and may eventually close the eyes so the bird cannot see. The swelling is the result of accumulated mucus in the facial sinuses. The mortality is low but there is considerable economic loss due to failure to gain.

CONTROL

In the absence of definite knowledge as to the cause of the disease, specific preventive measures cannot be recommended. It is advisable to provide an abundant source of Vitamin A, either as green feed, added cod liver oil, or green, leafy alfalfa hay, since there is some possibility that Vitamin A deficiency may be a predisposing factor. The most satisfactory treatment discovered to date is as follows:

With a glass syringe and a 20-gauge needle, remove the mucus from the cavity of the sinus. Then disconnect the syringe from the needle, leaving the needle in the sinus. With a second syringe, inject 1 c.c. of freshly prepared 4% silver nitrate solution in water. One injection is sufficient in many cases, but treatment may be repeated in ten days to two weeks if necessary. Segregation of affected birds is advisable.

INTERNAL PARASITES OF CHICKENS AND TURKEYS

There are many internal parasites which infest chickens and turkeys of which the Roundworms, Tapeworms, and Cecal Worms are of greatest significance. All Tapeworms have an indirect life cycle during which the larval stage of the parasite is spent in some intermediate host. Slugs, snails, earthworms, beetles, flies, ants, grasshoppers, and other insects may act as intermediate hosts for poultry tapeworms. There is no drug which is both safe and effective for the removal of tapeworms, including the heads, and consequently control of these parasites must be attempted through sanitation and destruction of intermediate hosts.

Roundworms and Cecal Worms have a direct life history; that is, the worm eggs, which are passed in the droppings, will, when picked up by chickens and turkeys, hatch in the digestive tract and produce a new crop of worms. Pens, runs, and ranges which have long been in use without plowing and cultivation are often heavily infested with roundworms and cecal worm eggs. Chickens and turkeys running on such infested premises usually become infested with large numbers of worms in a short time. Roundworms cause retarded growth, improper nutrition, diarrhea, and general lowered resistance, thus paving the way for any infection to which the flock may be exposed.

Cecal Worms, if present in large numbers, cause a severe inflammation of the ceca, a condition known as Typhlitis. Of greatest importance is the fact that the Cecal Worm egg often harbors the organism which produces Blackhead in turkeys. For this reason, it is extremely important to control the Cecal Worm, especially in turkeys but also in chickens.

Sanitary measures will seldom prevent worm infestations 100%, although they are of value and should never be neglected. Under practical conditions, it is generally necessary to worm chickens and turkeys at more or less regular intervals. For a regular worming program in both chickens and turkeys, we recommend the use of Globe A-C-Tol in the mash every four to six weeks, starting when the birds reach about 10 weeks of age. This is a flock treatment and its efficiency depends upon the birds eating a normal amount of feed. Birds with poor appetites, resulting from heavy parasitism, should be given the individual treatment, using Globe R. T. Tablets.

At the time that pullet flocks are housed, prior to the first season's production, it is advisable to give an individual treatment with Globe R. T. Tablets. Thereafter, during the production season, the use of Globe A-C-Tol at four to six-week intervals will usually serve to keep roundworm and cecal worm infestations within bounds.

Following worm treatment, the flock should be confined for 24 to 36 hours so that the droppings and worms which contain large numbers of worm eggs can be collected and destroyed by burning.

Globe Avi-Glo may be added to the mash according to label directions for several days to help promote lagging appetite in convalescent birds.

GLOBE A-C-TOL

To be mixed with the feed for the control of large Roundworms (Ascarids) and Cecal Worms in chickens and turkeys. Active Ingredients: Nicotine and Phenothiazine. Caution: Use only as directed.

CODE WORD:

- 5-Pound PackagePHENFUL
- 16-Ounce PackagePHENPO
- 8-Ounce PackagePHENIC

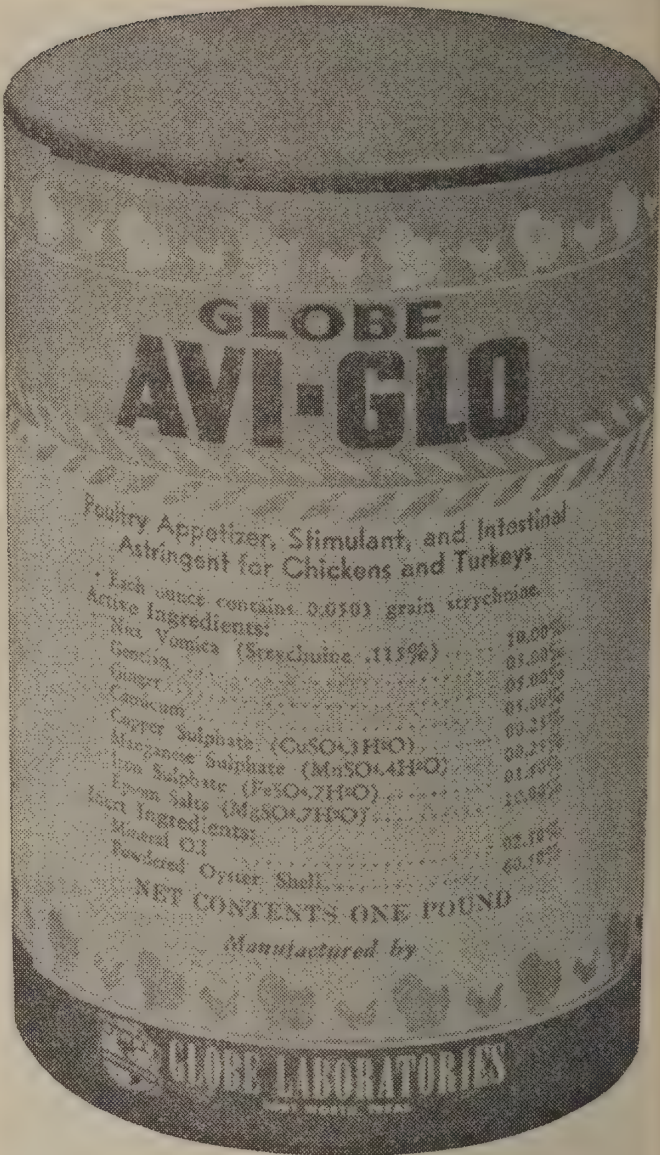
GLOBE R. T. TABLETS

For large Roundworms (Ascarids) and Cecal Worms in chickens over 10 weeks of age, and turkeys over 8 weeks of age. Active Ingredients: Nicotine and Phenothiazine.

CODE WORD:

- Bottle of 1,000 TabletsRTM
- Bottle of 250 TabletsRTFUL
- Bottle of 100 TabletsRTMED
- Box of 50 Tablets.....RTA

GLOBE AVI-GLO



An appetizer and tonic powder to be mixed with the feed for chickens and turkeys.

CODE WORD:

- 100 PoundsAVIHUN
- 50 PoundsAVIHAF
- 25 PoundsAVITOT
- 5 PoundsAVIFIV
- 1 PoundAVIPON

EXTERNAL PARASITES OF CHICKENS AND TURKEYS

The most important external parasites, from the standpoint of chickens and turkeys, are lice, mites, and blue bugs.

LICE

There are several species of lice which infest chickens and turkeys. They spend the entire life cycle on the bird and are incapable of living for more than very short periods off the bird. They reproduce by laying eggs or nits, which are found as greyish masses attached to the base of the feathers. Due to continuous skin irritation, which makes birds nervous and irritable and deprives them of needed rest, infested flocks become weakened and less productive.

The simplest and one of the most effective methods of treating lice infestations in chickens is to paint the roosts with Globe Roost Paint. Globe Roost Paint contains a new insecticide, B.H.C., which is evaporated by the heat of the bird and rises through the feathers, killing the lice very effectively. One application is usually sufficient for complete control if directions are followed carefully. Treatment of the roosts should be repeated whenever signs of reinfestation are noted.

Lice can also be controlled very effectively by dusting with Globe Lice Powder or with Globe A-D-A Lice Powder. The latter can be used safely on chickens of any age.

MITES AND BLUE BUGS

Red Mites and Blue Bugs are vicious, blood-sucking parasites of both chickens and turkeys and may cause heavy death losses in severe infestations. These parasites stay on the birds for only short periods of time during the immature stages. Thereafter they hide in the crevices of the chicken house except during the night, when they attack the flock to suck blood.

To control red mites and blue bugs in chicken houses, clean thoroughly and burn all old trash and litter, then paint or spray the inside of the house, including the roosts, nests, and droppings boards with Globe Carbo-Col, giving particular attention to all cracks and crevices which should be thoroughly saturated. A single, thorough application is usually effective for six months to a year. There is no necessity for treating the chickens.

GLOBE ROOST PAINT

CODE WORD:

Pint ROOSTED
8-Ounces ROOST

GLOBE A-D-A LICE POWDER

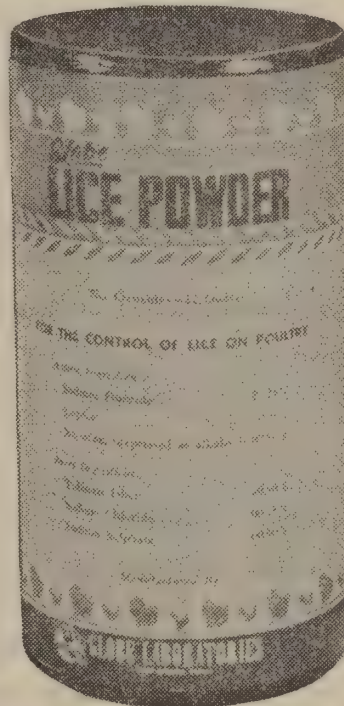
For the control of lice on all domestic animals and poultry, including baby chicks, turkeys and poults. Also effective against chig-

gers, fleas, and feather mites on poultry, and sheep ticks on sheep and lambs. Active Ingredients: Cube Resins, including Rotenone, Sulfur, Petroleum Oil.

CODE WORD:

1-Pound Package

GLOBE LICE POWDER

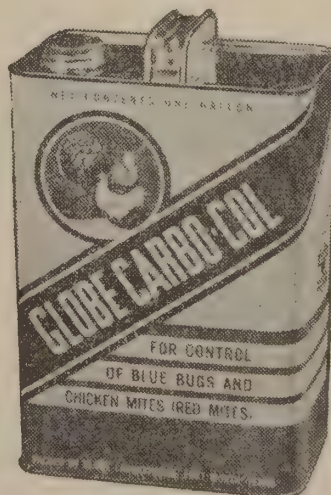


For the control of lice on poultry. Not recommended for use on young baby chicks. Active Ingredients: Sodium Fluoride, Sulphur, Nicotine.

CODE WORD:

12-Ounce Shaker-Top Can.....LIPOW

GLOBE CARBO-COL



For the prevention and extermination of chicken mites and blue bugs in poultry houses.

This product has exceptional wood-penetrating and preserving properties. Apply with paint brush or sprayer.

	CODE WORD:
1 Gallon	CARBO
1/2 Gallon	CARHAF

flocks, 2 c.c. repeated at 48-hour intervals as needed.

	CODE WORD:
250-c.c. Package	AROOP
125-c.c. Package	ASEMI
60-c.c. Package	ATWEN

MISCELLANEOUS POULTRY SPECIALTIES

GLOBE MIXED BACTERIN (AVIAN) TURKEY FORMULA

40% Pasteurella avicida, 40% Shigella gallinarum, 10% Staphylococcus (albus and aureus), 10% Pseudomonas aeruginosa.

Suggested for use as an aid in preventing infections attributed to the organisms listed in the formula.

Dose for prevention: Turkeys 2 c.c. injected into the breast muscle. Healthy birds in affected flocks, 4 c.c. repeated at 48-hour intervals as needed.

Vaccination of turkeys with this product interferes temporarily with blood testing for Pullorum Disease. Flocks vaccinated with Mixed Bacterin (Avian) Turkey Formula should not be blood tested for at least 60 days after vaccination.

	CODE WORD:
500-c.c. Package	TURFUL
250-c.c. Package	TURBIG
120-c.c. Package	TURMED
60-c.c. Package	TUREE

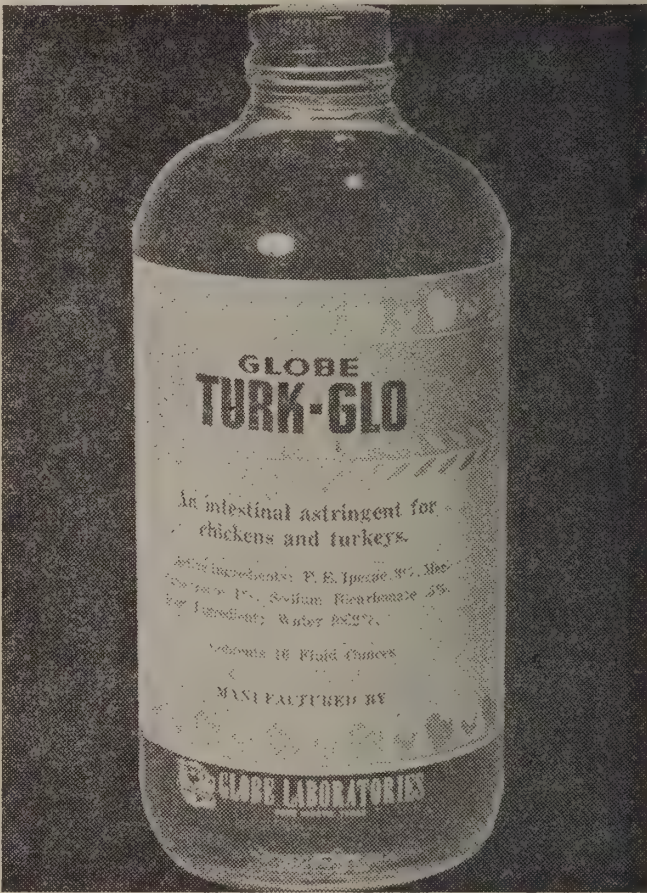
GLOBE MIXED BACTERIN (AVIAN) CHICKEN FORMULA (Whole Culture)

Pasteurella aviseptica	25.00%
Staphylococcus albus	12.50%
Staphylococcus aureus	12.50%
Streptococcus (non-hemolytic)	25.00%
Pseudomonas aeruginosa	25.00%

Recommended for use in vaccinating chickens to help prevent those conditions attributed to the organisms represented in the formula.

Dose for Prevention: 1 c.c. injected into the breast muscle. Healthy birds in affected

GLOBE TURK-GLO



For use in the drinking water of chickens and turkeys.

	CODE WORD:
1 Gallon	TURKBIG
32 Ounces	TURKMED
16 Ounces	TURK
8 Ounces	TURKEL

GLOBE AVA-LATE POULTRY TABLETS

For use in the drinking water of chickens and turkeys.

	CODE WORD:
Bottle of 1,000 Tablets	SMCM
Bottle of 500 Tablets	SMCL
Bottle of 100 Tablets	SMCFUL

INSTRUMENTS

CODE WORD:

Balling Forceps
(Spring Handle)FORP

Balling Gun (Equine)EQIGUN

Balling Gun (Keno)KENGUN

Balling Gun (S-T).....STGUN

Bleeding Needle and Measuring
Loop for blood-testing poultry...BLOOP

Branding Irons
For use in applying Branding Fluid.
Single letters and figures 3"
in height

Calf Dehorers

Cattle Dehorers

Cattle Leaders

Dental Float

Extra Rasp and File Blades.....

Dose Syringes
4-Oz. Short Type (Ideal)
4-Oz. Long Type (Ideal)
2-Oz. Short Type (Ideal)

Emasculator (for bloodless castration
of animals)

Large
Medium
Small

Intravenous Set (Gravity Flow)
B-D No. 7065 (36-Inch Tube)
B-D No. 7065 L (60-Inch Tube)
5 ft. Tube (Dellert or Dexco)

CODE WORD:

Jaw Spreader
(Sheep and Swine).....JAWS

Jaw Spreader and
Balling ForcepsJAWFORP

Jaw Spreader and
Keno Balling Gun.....KENSET

Mastitis Test Blotters,
50 to the package.....

Milk Fever Outfit.....

Milking Tubes

Needles

Sprayer, Globe All-Purpose
(Formerly Trombone)

Syringes (No needles included
with syringes)

505/10S

505/30S

507/10-c.c.

507/25-c.c.

507/40-c.c.

507/50-cc.

507/40/10 Syringe Set.....

Tattoo Sets (Set includes a pair of
tongs, set of figures 0 to 9,
small bottle of ink)

Standard, Complete.....

Revolving Head Type, Complete...

Extra Figures

Letters

Thermometers (Veterinary) Essex
4-Inch With Case.....

Trocar (Cattle)
Wood Handle with Plain
Cannula

Udder Infusion Tubes
B-D, 1¾-Inch

Eyes and Nostrils.....	{	Mucus.....	{ Infectious Coryza (Colds).....	1
			{ Avitaminosis A.....	2
		Cheesy Material.....	Bacterial Roup	3
		Blindness.....	Leucosis.....	4
Breathing.....	{	Gasping.....	Laryngotracheitis.....	5
			Heat Prostration.....	6
			Pneumonia.....	7
Comb.....	{	Dark Red.....	Fowl Cholera.....	8
			Blackhead.....	9
		Pale.....	Intestinal Parasites.....	10
			Tuberculosis.....	11
			Fowl Typhoid.....	12
			Fowl Leucosis.....	13
	Scabs.....	Fowl Pox.....	14	
Feathers.....	{	Ruffled.....	Intestinal Parasites.....	15
			Lice.....	16
			Coccidiosis.....	17
Wings.....	{	Drooped.....	Severe Parasitism.....	18
			Pullorum Disease.....	19
			Coccidiosis.....	20
			Blackhead.....	21
Loss of Flesh.....	{		Tuberculosis.....	22
			Intestinal Parasites.....	23
			Fowl Leucosis.....	24
			Avitaminosis A or D.....	25
Legs.....	{	Paralysis or Weakness.....	Coccidiosis.....	26
			Fowl Leucosis.....	27
			Botulism.....	28
Neck.....	{	Limber.....	Cholera (Late Stages).....	29
			Botulism.....	30
		Yellowish-Brown.....	Cholera.....	31
Blackhead.....	32			
Diarrhea.....	{	Green.....	Fowl Typhoid.....	33
			Fowl Leucosis.....	34
		Bloody.....	Coccidiosis.....	35
		Whitish.....	Pullorum Disease.....	36
			Intestinal Parasites.....	37

POST-MORTEM EXAMINATION

1. Mucus in nasal sinus and bronchii.
2. Nodules in oesophagus. Kidneys enlarged, pale.
3. Cheesy exudate in nose and throat which has a putrid odor. Cheesy plugs found in the sacs below the eye.
4. Liver and kidneys enlarged. Tumors in abdominal cavity, spleen enlarged.
5. Trachei and Bronchii congested, may contain mucus, blood or pus.
6. Yellow spots on liver in baby chicks.
7. Lungs dark gray, firm and may contain pus, or cheesy nodules.
8. Intestinal inflammation, lungs congested. Petechial hemorrhages on heart.
9. Liver enlarged and contains ulcers, also ulcers in ceca.
10. Enteritis and thickening of intestinal wall, presence of parasites.
11. Liver enlarged, nodules in intestines, spleen and liver.
12. Mahogany or greenish colored liver, may have white spots. Intestinal inflammation, grayish heart.
13. Liver and kidneys enlarged. Tumors in abdominal cavity, spleen enlarged.
14. May be a white diphtheroidal membrane in mouth cavity.
15. Enteritis and thickening of intestinal wall, presence of parasites.
16. Found on the skin beneath feathers.
17. Enteritis, ceca may be filled with blood or contain cheesy cores.
18. Enteritis and thickening of intestinal wall, presence of parasites.
19. White spots on liver, nodules in lungs. Ovaries shrunken and greenish.
20. Enteritis, ceca may be filled with blood or contain cheesy cores.
21. Liver enlarged and contains ulcers, also ulcers in ceca.
22. Liver enlarged, nodules in intestines, spleen and liver.
23. Enteritis and thickening of intestinal wall, presence of parasites.
24. Liver and kidneys enlarged. Tumors in abdominal cavity, spleen enlarged.
25. Nodules in oesophagus. Kidneys enlarged. Bones soft.
26. Enteritis, ceca may be filled with blood or contain cheesy cores.
27. Liver and kidneys enlarged. Tumors in abdominal cavity, spleen enlarged. Also nerve in affected leg enlarged.
28. Putrid odor in crop and presence of maggots and moldy feed. Enteritis.
29. Intestinal inflammation, lungs congested. Petechial hemorrhages on heart.
30. Putrid odor in crop and presence of maggots and moldy feed. Enteritis.
31. Intestinal inflammation, lungs congested. Petechial hemorrhages on heart.
32. Liver enlarged and contains ulcers, also ulcers in ceca.
33. Mahogany or greenish colored liver, may have white spots. Intestinal inflammation, grayish heart.
34. Liver and kidneys enlarged. Tumors in abdominal cavity, spleen enlarged.
35. Enteritis, ceca may be filled with blood or contain cheesy cores.
36. White spots on liver, nodules in lungs. Ovaries shrunken and greenish. Also yolk unabsorbed in baby chicks.
37. Enteritis and thickening of intestinal wall, presence of parasites.

PRODUCTS SUGGESTED FOR USE

- Poultry Spray, Kome-Glo in the drinking water. Cole-Ade in mash.
Balanced diet.
Balanced diet—10% Argyrol in eyes. Poultry Spray.
- No specific treatment. Isolate all affected birds. Poultry Mineral Tablets. Control internal and external parasites.
Poultry Spray. Isolate affected birds.
- Control temperature.
Poultry Spray. Avoid moldy feed and litter. Avoid drafts.
Avissepticus-Gallinarum Bacterin. Strict sanitary measures. Ava-Late Tablets, or Poultry Mineral Tablets. Range or pasture rotation.
- R. T. Tablets. A-C-Tol in mash.
- Testing and elimination of reactors. Disinfect contaminated premises with Globe Dip.
Avissepticus-Gallinarum Bacterin. Ava-Late Tablets, or Poultry Mineral Tablets. Sanitation.
- No specific treatment. Isolate all affected birds. Poultry Mineral Tablets. Control internal and external parasites.
Vaccination of flock with Pox Vaccine. Remove scabs and apply Gall Lotion.
R. T. Tablets. A-C-Tol in mash.
- A-D-A Lice Powder. Globe Lice Powder. Roost Paint. Globe Cocci-Ade in drinking water or feed.
- R. T. Tablets. A-C-Tol in mash.
- Blood testing and dispose of all reactors.
Globe Cocci-Ade in drinking water or feed.
Range or pasture rotation. Sanitation.
- Testing and elimination of reactors. Disinfect contaminated premises with Globe Dip.
R. T. Tablets. A-C-Tol in mash.
- No specific treatment. Isolate all affected birds. Poultry Mineral Tablets. Control internal and external parasites.
Balanced diet—Poultry Mineral Tablets. Green feed. Sunshine.
Globe Cocci-Ade in drinking water or feed.
- No specific treatment. Isolate all affected birds. Poultry Mineral Tablets. Control internal and external parasites.
Epsom Salts. Botulinus Antitoxin.
- Avissepticus-Gallinarum Bacterin. Strict sanitary measures. Ava-Late Tablets, or Poultry Mineral Tablets.
Epsom Salts. Botulinus Antitoxin.
- Avissepticus-Gallinarum Bacterin. Strict sanitary measures. Ava-Late Tablets, or Poultry Mineral Tablets. Sanitation.
- No specific treatment. Isolate all affected birds. Poultry Mineral Tablets. Control internal and external parasites.
Globe Cocci-Ade in drinking water or feed.
- Blood testing and dispose of all reactors.
R. T. Tablets. A-C-Tol in mash.

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GLOBE

CLOSTRIDIUM CHAUVEI - SEPTICUS

10 Doses
(50 c.c.)



The
Dependable Product

FORMULA: Sterile alum treated concentrated culture of Clostridium chauvei 50% and Clostridium septicum 50%. For the vaccination of non-affected cattle and sheep for the prevention of Blackleg and Malignant Edema. Dose: Cattle 5 c.c., Sheep 3 c.c., injected beneath the skin. Shake bottle well before filling syringes. This product should be kept in a dark place at temperatures not exceeding 45° F.

Produced under U. S. Veterinary License No. 158 by

BACTERIN

GLOBE LABORATORIES • FORT WORTH, TEXAS

"The Double-Duty Bacterin With the Gold Label"



ANIMAL-POULTRY HEALTH PRODUCTS

Since 1919



The
Dependable Product

BLACKLEG BACTERIN

10 Doses (50 C. C.)

WHOLE CULTURE (ALUM TREATED)

Sterile whole culture Cl. chauvoei (Alum Treated).

For the prevention of Blackleg.

Dose: 5 c. c. for calves or older animals, injected beneath the skin.

Thoroughly clean and disinfect syringes, needles, and site of injection before using.

This product should be kept in a dark place at temperatures not exceeding 45° F. All contents of this container should be used at the time the rubber stopper is first punctured.

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"Sterling Quality in the Silver Box"